May 24, 1948

STEEL

The Magazine of Metalworking and Metalproducing

ESTABLISHED 1882

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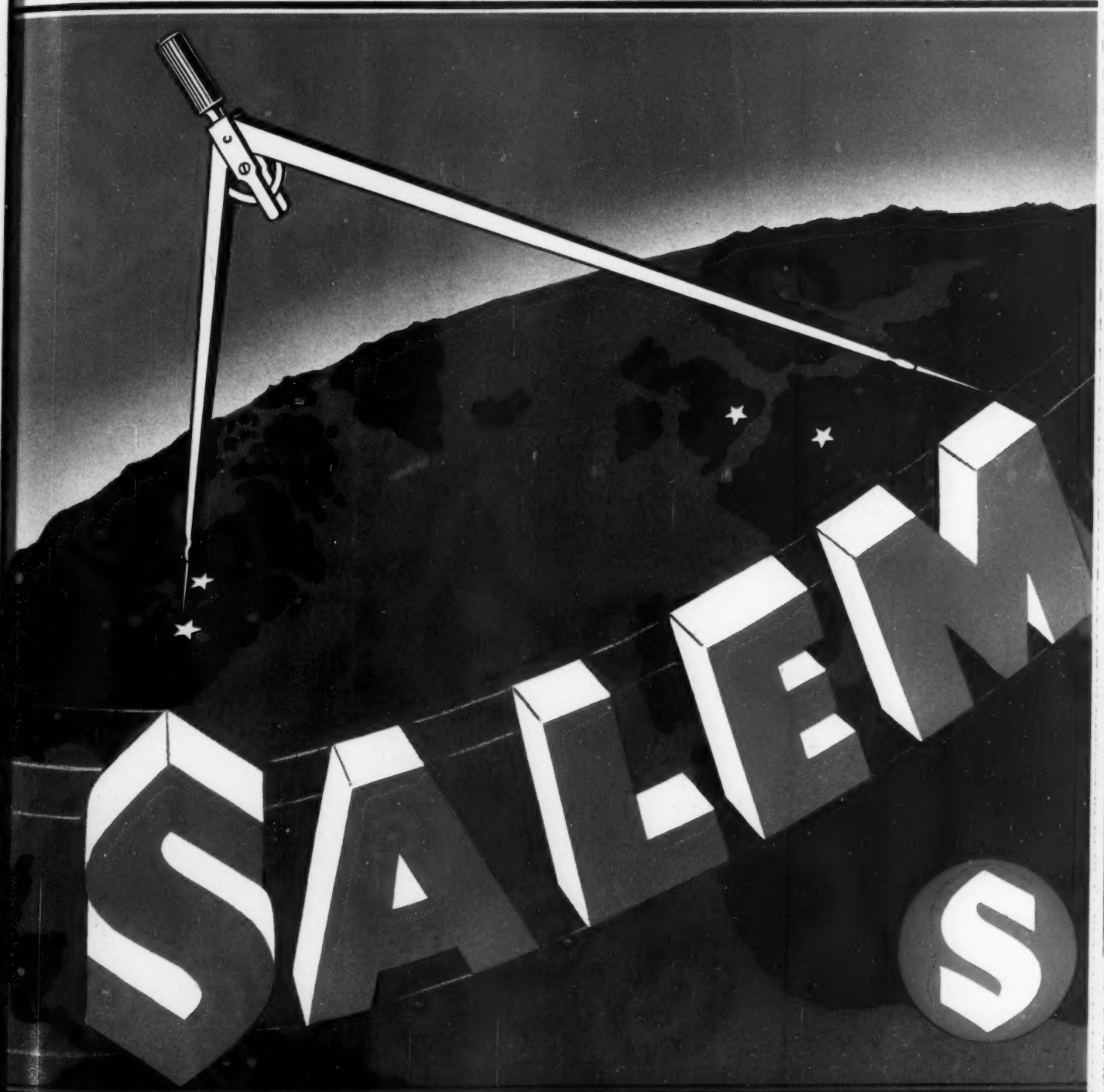

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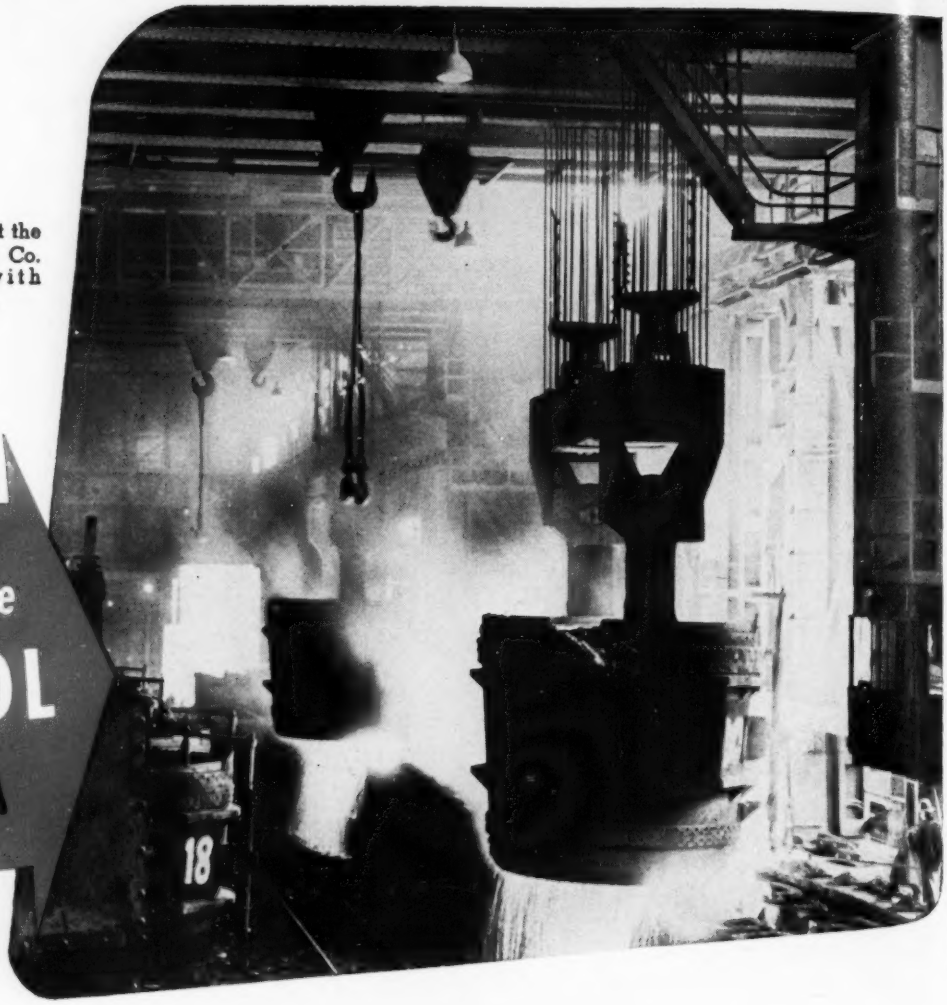

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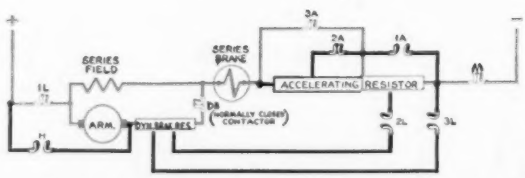

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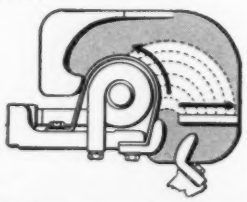

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Organic Finishes for Metal Products

New Assembly Approach Used To Build Integral Auto Bodies

Wage Incentives Increase Production, Control Costs

STEEL

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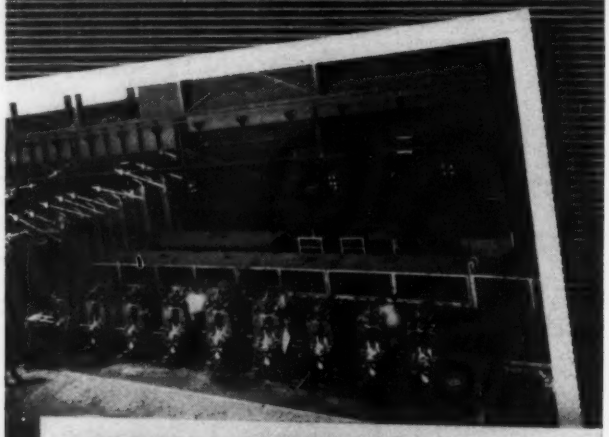

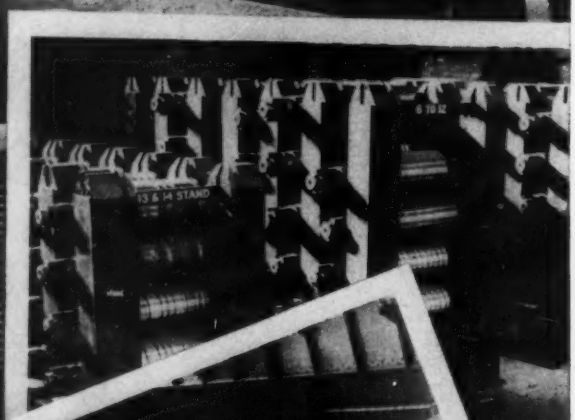

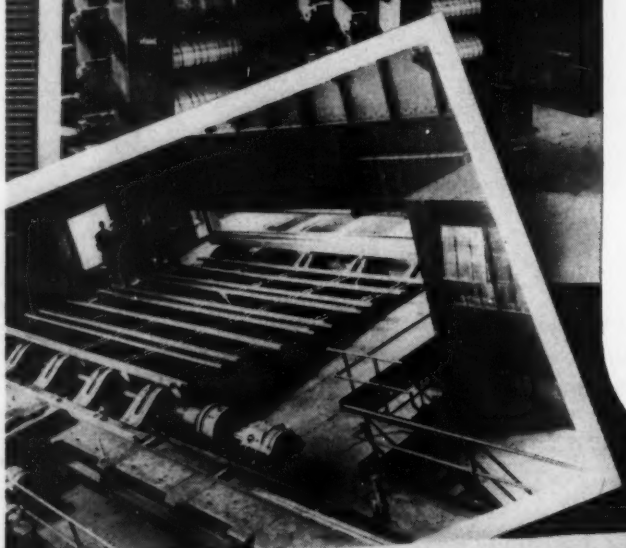

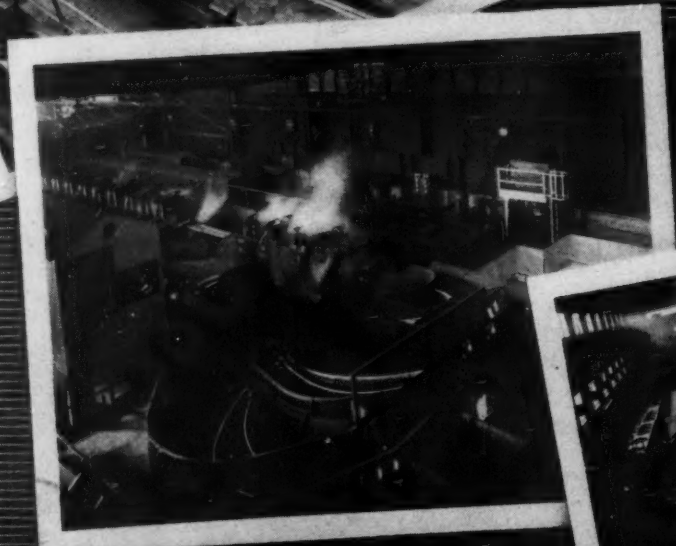

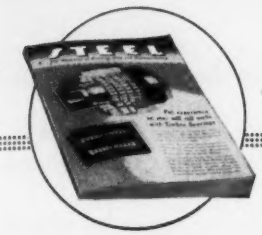

May 24, 1948

Ominous Predictions

Ever since the Supreme Court announced its decision in the cement case there has been conjecture as to what this ruling will mean to the metalworking industries. Thus far, most authorities have agreed that it is likely to outlaw the multiple basing point system and that eventually it may force American industry to conform to something closely resembling an f.o.b. mill price policy.

To a majority of producers and consumers the implications are shocking. Even if the transition were attempted by easy stages over an extended period, it would entail drastic adjustments, some of which would be detrimental to the national economy.

If industrialists are shocked by these predictions, what will be their reaction to the views of Lowell B. Mason, who is the first member of the Federal Trade Commission to offer an interpretation of the Supreme Court's decision?

Speaking at the Harvard School of Business Administration, Mr. Mason said that the court's rulings in the cement and glucose cases point to far-reaching changes in business practices. In this respect his opinion parallels closely that of most other observers. In another respect, Mr. Mason goes far beyond the expectations of contemporary interpreters. "If the laws stand as they now are," he said, "I predict trade associations are out. At least, the present administrative trend will make life so uncomfortable for members of associations that the hazards of membership will hardly be worth any legitimate advantages."

This is an ominous forecast. It comes from a member of FTC who has shown a disposition to view industry's problems sympathetically and realistically. For this reason his belief that trade associations are threatened should not be dismissed lightly.

During many decades trade associations have played an important role in the development of this nation. Of the few which have tried deliberately to evade antitrust laws, some have been found guilty. Others, unintentionally transgressors because of confusion in the interpretation of these laws, have suffered. A majority has served industry faithfully, effectively and without taint of law violation. On the whole, the American trade association as an institution has been a constructive force in the nation.

If this agency for good really is threatened, it should not be abandoned without a fight.

* * *

2-SIDED BARGAINING: Strikes and threats of strikes affecting companies in the metalworking industries stem largely from the increasing reluctance of employers to grant third-round wage increases with the same abandon which characterized their action in the first two rounds.

Most major steel companies, under two-year contracts with the steelworkers, refused to grant union demands for wage increases at the end of the first year of the contracts a short time ago. The major electrical companies also stood pat on present wage levels. Chrysler Corp. employees are on strike after turning down the company's offer of an increase of 6 cents an hour. Ford Motor countered UAW-CIO demands for a wage increase of 50 cents an hour with a five-point proposal, one of which would eliminate the wage differential of about 10 cents per hour which Ford employees have enjoyed in relation to the wages of employees of other major automobile companies.

The strike vote of General Motors employees will be tested soon and shortly thereafter the

(OVER)

always troublesome battle of wits between the soft coal operators and John L. Lewis will proceed to a showdown. Meanwhile, negotiations between unions and numerous fabricating and manufacturing companies are resulting either in work stoppages or grants of increases of 6 to 12 cents per hour.

All in all, the outlook for peaceful labor relations is not promising. On the other hand, the era of ready acquiescence to stiff union demands is at an end. The pendulum is swinging toward greater equality in bargaining.

—pp. 61, 75

* * *

PAINFUL ADJUSTMENTS: In the discussion of the possible effect of the Supreme Court decisions on cement, glucose and rigid conduit, some lawyers are of the opinion that if an f.o.b. mill price system is to go into effect, producers will be tempted to buy outright the businesses of some of their best customers. Some other spokesmen foresee the possibility that major producers will be forced to acquire or build warehouses in strategic locations.

These are only two of the numerous adjustments that might occur if the court actions finally result in a banning of present price practices. Many of the adjustments would intensify trends that already have been frowned upon by the authorities in government who are pressing hard for the f.o.b. mill system.

From the customers' standpoint, the shift from basing points to f.o.b. mill would entail numerous adjustments, some of which would be exceedingly painful to consumers—especially those at a distance from any adequate source of supply. —pp. 64, 65, 68

* * *

LIMITS ALLOCATIONS: A snag has developed in the use of voluntary allocation programs which involve industry agreements under Public Law 395.

The Justice Department has ruled that participants in such programs are not immune from antitrust laws unless these agreements are aimed at fighting inflation. It follows, therefore, that agreements covering steel for rearmament or for foreign aid are not immune from antitrust laws.

At the time voluntary allocations were first proposed, representatives of many companies promptly raised the question as to whether or not participants in the program would be granted immunity from antitrust measures. After some study of the subject, the Justice Department acted affirmatively. Its present action serves to limit the allocations program in a way that is embarrassing to government officials and industrialists.

A suggested remedy is for Congress to amend Public Law 395 to permit voluntary allocations for any desirable purpose, with antitrust law immunity as long as the allocations are carried out under government supervision. Unless this or some other "out" is found, the voluntary allocations plan will not be given a fair chance to function. —p. 66

* * *

MORE PIECES PER TON: According to a survey made by Carnegie-Illinois Steel Corp., the tonnage of low-alloy, high-strength steels shipped to customers currently is running 80 per cent ahead of comparable 1947 tonnage.

A refrigerator manufacturer who formerly used 220 tons of carbon steel to produce 12,000 wrap-around sheets for refrigerator body boxes now obtains the same number of sheets from 160 tons of high-strength steels. Another manufacturer finds that 500 tons of high-strength steels will make 10,000 propane gas cylinders, whereas formerly only 7500 cylinders were obtainable from the same tonnage of carbon steel.

Apparently fabricators and manufacturers not only are recognizing the advantages of high-strength steel which apply in normal times but also are finding that use of this product presents a welcome and an effective means of alleviating the present shortage of steel. —p. 72

* * *

23 WOULD MAKE CARS: In 1921 there were 89 makes of passenger automobiles on the market. Today there are 20, only one of which sells at below $1000. This is the Crosley.

In spite of this shrinkage in the number of makes, 23 new companies have announced plans for entering the passenger car field in recent years. Strangely enough, most of the newcomers aim at producing small cars to sell below $1000. The others are the rear-engined Tucker, two racing cars, three "flying" cars, one motorized rickshaw to be marketed in China and one custom-built unit priced at $25,000.

This line-up reflects the apparent strong lure of the small car market—even in a period of material scarcities and high costs. —p. 76

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

SECOND WAGE OFFENSIVE— Organized labor is making its second major try for a third round wage increase in the metalworking industries in its current strike against Chrysler Corp. (pp. 61, 75). The first attempt—against the basic steel industry—was decisively repulsed when the industry refused to raise wages and at the same time cut steel prices in an industry-sponsored anti-inflation program. Should the automobile workers fail at Chrysler, much of the enthusiasm for the third round wage battle will be lost. Should they win, watch for other wage demands and work stoppages throughout the summer.

BASING POINT PRICING— Implications of the cement case decision outlawing basing point pricing are being pondered by many industries. A member of the Federal Trade Commission, which instituted the cement action and similar cases pending against other industries, believes (p. 65) the decision means the end of trade associations, of multiple basing point pricing, of freight absorption, of zone pricing and of universal delivered price systems. The Supreme Court ruling in the cement case also is being used as a precedent by the lower court and influenced the decision of a circuit court of appeals outlawing the basing point pricing system of the rigid steel conduit industry (p. 64). One effect of the decision may be to encourage producers of primary materials to buy up (p. 68) consuming companies.

ALLOCATIONS— Steel for rearmament and for foreign aid cannot be covered by the voluntary allocations program, the Justice Department has ruled (p. 66). This leads to a proposal that the law enabling the voluntary allocations be broadened, to take advantage of this simple method for channeling steel to these essential needs.

MOBILIZATION PLANNING— Speeding up of planning for industrial mobilization in event of a war emergency is being sought through reorganization of the functions of the National Security Resources Board (p. 71). Planning to date has been slowed by numerous shifts in the strategic plans of the armed services and by difficulty in obtaining competent personnel.

GRAY MARKETS—Steel producers were invited to use the facilities of the courts in "cleaning house" of steel gray market activities by a Chicago federal district judge who last week granted an injunction (p. 63) to Jones & Laughlin forbidding certain brokers from using the company's name in soliciting sales of premium-priced steel.

MAKING STEEL GO FARTHER— The postwar steel shortage is causing an increasing number of consumers to turn to the low-alloy, high-strength steels which permit production of as many as one-third more finished products per ton than carbon steel. Survey by a leading producer (p. 72) shows shipments of the higher quality steel are running 80 per cent ahead of 1947.

FRANCHISE TAX MODIFIED— District of Columbia's franchise tax act, which provided an onerous burden on many companies doing business with the government, has been modified (p. 70). The revised measure levies no tax on companies outside the district which do not maintain offices or representatives in Washington.

SIGNS OF THE TIMES— Federal charter for the American Standards Association, a federation of 72 technical societies, trade associations and government agencies, is suggested in Congress (p. 68) to eliminate present objections to federal agencies participating in the ASA's work . . . A United States Air Academy, similar to West Point and Annapolis, is proposed (p. 70) in a House bill . . . Twenty-three new companies are seeking to enter the automobile field with new cars (p. 76) . . . Scrap and coke shortages continue to retard steel output in the United Kingdom (p. 73). Britain also is having difficulty in importing scrap from the Continent . . . Russia claims (p.73) output of pig iron and expansion of metalworking facilities are ahead of schedule under the current 5-year plan. . . . Expenditures for new plant and equipment in 1948, are estimated (p. 80) at $18.7 billion, an increase of 15 per cent over 1947.

A RESTATEMENT of POLICY Regarding the Distribution of INLAND STEEL

★ ★ ★ ★

During recent weeks several individuals, entirely unknown to us, have made offerings of Inland steel to consumers, or indicated their ability to make arrangements with us for the conversion of steel supplied by others.

No such representations have ever been authorized by us, and they are therefore false. All of our sales, including conversion arrangements, continue to be handled exclusively by the Inland organization directly with our customers. We do not deal with brokers or intermediaries of any kind.

We would be glad to have steel consumers call to our attention any such representations which might be made to them. They will be passed along to the proper government authorities.

All transactions—sales of our own steel and conversion arrangements—are made with the understanding that manufacturers are purchasing the products for their own use and not for resale. It is our announced policy to discontinue sales to any customer violating this understanding.

We are taking every possible precaution to make sure that our steel will be directed into proper channels. We feel sure that we have the support of steel consumers in this endeavor.

INLAND STEEL CO.
Chicago

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May 24 1948

Auto Strike Tests Industry's Wage Resistance

Pickets parade in front of the East Jefferson plant of Chrysler in Detroit as 75,000 workers are idled in an attempt to force third round wage increases. NEA photo

Organized labor, rebuffed in attempt to gain third round increase from steel, pins hopes on automakers. Lewis breaks up negotiations on new contract for coal miners

THE SECOND skirmish in the battle for the third round wage increase—that now underway between the United Auto Workers and Chrysler Corp.—may be decisive in determining the course of industry's labor relations over the remainder of the year.

The first skirmish, spearheaded by the United Steelworkers against the basic steel producers and accompanied by a foray against the large electrical manufacturing companies by the United Electrical workers, ended in a repulse for the unions. United States Steel Corp. refused a wage increase in the interest of combatting inflation. Simultaneously, U. S. Steel announced reductions in prices of its products. Other large steel producers and the major electrical manufacturing companies followed suit.

The steelworkers are under two-year, no-strike contracts and the refusal of the companies to grant an increase apparently ended that contest automatically. The electrical workers could, and may yet, strike the electrical manufacturing companies, but are stalling and waiting to see what happens in the automotive field.

Third major skirmish is now shaping up—between John L. Lewis, head of the United Mine Workers, and the coal mine operators. The miners' contract expires June 30 and negotiations for a new agreement were broken off by Lewis last week.

Outcome in Doubt — Numerous questions remain to be answered before the third round wage increase issue is finally resolved. One is: How far will the unions go in pressing their wage demands? Another is: How firm will be the resistence by management in the automotive, coal, electrical and other industries to the union demands? Still another: To what extent will industry's anti-inflation program be implemented by price reductions? And a fourth: What will John L. Lewis and his coal miners do?

Hundreds of metalworking companies and thousands of metalworking employees are awaiting the answers to these questions.

Organized labor's position was damaged seriously by the rebuff by the steel producers. Traditionally, the wage settlement between the basic steel producers and the union has influenced the settlement in other segments of the metalworking industry.

When the steelworkers failed to win concessions, the only move left to the CIO was to pass the ball to the No. 2 union, the UAW, which currently is striking Chrysler. The auto workers also have threatened to strike General Motors on May 28 and is fencing with Ford on demands for wage increases and other concessions.

Should the UAW fail to win concessions from the automakers, the next test of management's resistance to a new round of wage increases is likely to be made by the United Mine Workers.

Should the steel, auto workers and coal miners all fail to win wage increases, other unions are likely to accept the situation more or less philosophically.

Should the auto workers and/or coal miners win important pay increases, however, the small unions will continue to press for raises and the steelworkers probably will renew their demands.

Metalworking Strikes Threatened—Steel consuming companies, including many organized by the United Steelworkers, still face demands from the unions.

While most of the wage contracts signed last year by the United Steelworkers and the basic steel producers run for two years, many of the agreements between the United Steel-

workers and fabricating companies are for one year only. These contracts will expire at various dates throughout the summer. The failure of the steelworkers union to win a wage increase from the basic producers will not prevent the union from making wage demands on these companies and striking the fabricating plants if the demands are not met.

Scattered metalworking plants already have renewed contracts with the electrical, steel and auto workers' unions and in many cases have granted moderate wage increases. These increases, however, are not necessarily third round raises, but in many cases are second round increases or adjustments to bring local rates in line with those prevailing in the industry. Usually, these settlements have been effected without work stoppages.

T-H Noncompliance Hit — Philip Murray, president of the CIO and of the United Steelworkers, has been notified by the large steel producers they will not negotiate new contracts with the steelworkers unless the union complies with the noncommunist provision of the Taft-Hartley Act. The United Steelworkers is one of the few major labor organizations whose officers have refused to sign the noncommunist affidavits required by the law. A noncomplying union is prohibited from using the services of the National Labor Relations Board.

If the steel fabricating companies, whose contracts with the union expire this summer, follow the lead of the basic producers and refuse to bargain with the steelworkers as long as the union fails to comply with the law, this issue may cause strikes in the nonbasic steel plants this summer.

Murray warned of this danger at the United Steelworkers convention in Boston and predicted that half of the 100,000 or more steelworkers whose contracts expire in 1948 may be on strike this year. The union has approved raising monthly dues from $1.50 to $2 to raise a fund for the relief of potential strikers.

Reports from personnel counsellors and industrial relations directors indicate the majority of workers are opposed to striking to enforce third round wage demands. In some cases, the resistance of union members to "hitting the sidewalk" has been communicated to union leaders by petitions. Most noteworthy of these was the plea of General Motors workers to top UAW officials not to "make us the guinea pigs again."

What Will Lewis Do?—Whether or not the coal mines will be shut down at the beginning of July for another costly strike remains a top—and tough — question. UMW Chief John L. Lewis broke up contract negotiations before they got well started last week in an argument over the seating of a representative of the southern operators.

Although the conference of operators and miners broke up before Lewis demands were presented, they were expected to be something like this:

Increase in the present 10-cent-a-ton levy for the miners' welfare fund to 40 cents a ton.

Settlement of the old-age pension fund plan.

Possible reduction in the work-week from 40 hours to 35 hours, with no reduction in take-home pay. This would figure out to an increase of about 24 cents an hour over the present base rate of $1.63.

A vacation bonus, with $250 mentioned as a bargaining figure.

Following breakup of the negotiations, operators were gloomy over the prospects of reaching a new agreement before the June 30 deadline. Should no contract be signed by that time, expectations are that the miners will refuse to enter the mines under their traditional "no contract, no work" policy.

ANTIUNION SPEECHES O.K.

Employers may require workers to attend meetings on company time and property and listen to antiunion speeches. This ruling was handed down by the National Labor Relations Board last week. It reverses an earlier ruling under the old Wagner Act and was made to conform to the provisions of the Taft-Hartley Act.

The latest ruling resulted from a case involving the Babcock & Wilcox Co. of Augusta, Ga., and the United Stone & Allied Products Workers-CIO. Prior to a scheduled bargaining election workers were asked to attend meetings at which a company superintendent made speeches against the CIO union.

The NLRB, which in 1946 had held similar action by an employer to be an unfair labor practice, held that the Taft-Hartley law permitted such practices.

Although the United Steelworkers found its weapons ineffective against the basic steel producers, union officers have not yet given up hope of winning an increase in 1948 from the nonbasic steel companies, many of whom have contracts expiring this year. Above, President Philip Murray receives a baseball bat from a delegate to the union's convention in Boston. NEA photo

Allocations Threat Spurs Warehouse Group Revival

Spurred by problems of steel allocations, about 30 steel distributing companies throughout the country last week met in Cleveland to discuss plans for re-activating the Steel Products Warehouse Association.

The trade association was originally organized in 1942, according to Clayton Grandy, secretary of the old group.

Firms represented at the meeting were warehouse companies whose inventories include principally sheets, plate, strip and bars, Mr. Grandy said.

"Clean House," Judge Advises Steelmakers

UNITED States District Judge Michael L. Igoe, Chicago, issued a temporary injunction May 18 restraining Howard Kimble, Chicago steel broker, from using the name of Jones & Laughlin Steel Corp., Pittsburgh, in selling steel in what the company claimed was a gray market operation. A suit filed by the company the previous week had asked for the injunction and $100,000 damages. The judge continued until Sept. 20 the request for damages.

In his action, Judge Igoe called the suits a challenge to the steel industry to "clean your houses of gray market operations" and said "this court is at your disposal" to help. He stated that this "reflects one of the saddest aspects of the economic plight of the nation. One of the products which we must have to exist is ending in the gray market instead of the open, free market, and is handled in such a way that it enriches those who deal with it surreptitiously and upsets our economy."

Jones & Laughlin attorneys introduced an affidavit alleging that Kimble and Harry C. Edwards, Detroit, had offered gray market steel to Ford Motor Co.

Reveals Steel Offer—An affidavit from Franklin A. Janin, credit manager, Korhumel, Heffron & Preiss Steel Co., Chicago, also was introduced stating that this company had been offered 2000 tons of steel a month for 12 months by Kimble. Mr. Janin said the purchase order was to be made out to Jones & Laughlin and that Kimble was to be paid the difference between mill price and $75 a ton.

A principal witness was Alvin A. Schultz, Chicago, under whose direction Kimble said he was acting when he offered to sell steel ingots to Ford at $75 a ton. Schultz, who described himself as a manufacturers' representative, denied he knew the steel was being offered at such high prices or that he had said it was coming from Jones & Laughlin.

Presented in evidence was a letter written to Schultz, Oct. 16, 1947, by J. J. O'Donovan, president, O'Donovan & Co., Carlton Hotel, Washington. In it, O'Donovan said he had arranged with a certain steel producer to get 20,000 tons of steel ingots each month for a year or two. He asked Schultz to obtain rolling mill time to process the ingots into sheets.

Deny J & L Name Used—Schultz testified he was to get 25 per cent of the steel to dispose of as he wished in return for arranging rolling mill time. That, he stated, was the steel for which Kimble was taking orders. He said he expected to split a fee of about $1 a ton with Kimble. However, he asserted he has never ordered the ingots from O'Donovan or scheduled the rolling mill time.

Schultz and Kimble both denied the Jones & Laughlin charge that the latter's name was used in the dealings.

Before issuing the temporary injunction and announcing the continuance, Judge Igoe observed "it is quite apparent that everyone here is not telling the truth."

Commenting on the court's action, Ben Moreell, president of J & L, stated, "I am gratified that the Federal District Court in Chicago issued an injunction restraining the defendants in our suit from using the name of Jones & Laughlin Steel Corp. in their efforts to negotiate transactions in steel. Further, I am pleased that Judge Igoe offered the services of his court to assist the steel industry in investigating and ferreting out individuals who are promoting the gray market in steel. For a long time, Jones & Laughlin has been persistently active in its efforts to suppress unethical transactions."

Canadian Steel Output At Record High in March

Canadian steel production for March was at an all-time high, while pig iron output was at the highest level since last November.

For March, output of steel ingots and castings totaled 286,026 net tons, or 94.9 per cent of total rated capacity and compares with 82.6 per cent for February. Output for the month under review included 275,349 tons of steel ingots and 10,677 tons of steel castings.

Production of pig iron in March was 172,675 net tons.

Present, Past and Pending

■ IMPROVED ENGINES TO POWER 1949 FORDS
DETROIT—An improved V-8 engine and a new six-cylinder engine will power the 1949 Fords. They are said to provide improved gasoline and oil economy, better all-around performance and smoother operation.

■ $5 MILLION REFINERY UNIT AUTHORIZED
CLEVELAND—Construction of a $5 million oil refining unit at the Lima, O., refinery of Standard Oil Co. of Ohio has been authorized.

■ BLAW-KNOX TO COMPLETE FUEL PLANT
PITTSBURGH—Blaw-Knox Co. has received a U. S. Bureau of Mines contract for engineering, procurement and erection services in the completion of a Fischer-Tropsch pilot plant at Bruceton, Pa. The plant is part of the bureau's research program in production of synthetic liquid fuels from coal.

■ EATON AXLES TO BE MADE IN CANADA
CLEVELAND—Eaton Mfg. Co. has completed arrangements with McKinnon Industries Ltd., a General Motors Corp. subsidiary, to manufacture Eaton's two-speed truck axle in St. Catherines, Ont., Canada.

■ U. S. FIRM GETS GERMAN ALUMINUM SCRAP
NEW YORK—In the first sale of aluminum scrap at Heidelberg, Germany, 5600 tons, 90 per cent of it secondary aluminum from wrecked aircraft, were awarded to Aluminum Co. of America, Pittsburgh.

■ FOREIGN DEMAND UP FOR STEAM EQUIPMENT
NEW YORK—Foreign buying of packaged steam generators has increased sharply in the last 30 days, according to Superior Combustion Industries Inc. The two European countries most active in acquiring steam plant equipment are said to be Belgium and Holland.

■ CEMENT MAKERS CONSIDER NEW PRICE SYSTEM
PHILADELPHIA—Several cement producers are reported considering adoption of a policy of quoting prices on an f.o.b. mill basis with purchaser paying freight costs. Multiple basing point pricing in the sale of cement recently was outlawed by a Supreme Court decision.

Cement Case Sets Precedent

Supreme Court's decision against multiple basing point pricing influences appellate court in outlawing system for rigid steel conduit industry

RECENT DECISION of the United States Supreme Court that multiple basing point pricing, in conspiracy, in the sale of cement is illegal influenced the United States Circuit Court of Appeals for the Seventh Circuit, Chicago, in upholding a Federal Trade Commission order forbidding the rigid steel conduit industry from using the basing point price system.

The appellate court decision was handed down by Judge Otto Kerner and concurred in by Judges William Sparks and Sherman Minton after 14 corporate manufacturers of rigid steel conduit and five representatives of these corporations asked the court to set aside an FTC cease and desist order charging the petitioners collectively with violating the FTC Act by engaging in unfair methods of competition in commerce. The FTC order had been based upon a complaint in two counts.

First count alleged the existence and continuance of a conspiracy for the purpose and with the effect of substantially restricting and suppressing actual and potential competition in the distribution and sale of rigid steel conduit in commerce, effectuated by the adoption and use of a basing point method of quoting prices for rigid steel conduit.

The second count did not rest upon an agreement or combination but charged that each corporate petitioner and others violated Section 5 of the FTC Act through concurrent use of a formula method of making delivered price quotations with the knowledge that each did likewise, with the result that price competition between and among them was unreasonably restrained.

Says Customers Denied Advantage—The second count charged that nearby customers were deprived of price advantages which they would have naturally enjoyed by reason of their proximity to points of production and that such action created for the conduit sellers a monopolistic control over price and distribution.

In their appeal, the petitioners asserted the FTC had made no finding as to when the conspiracy was instituted, how long it continued, and who participated in the conspiracy. Furthermore, they insisted that the FTC had failed to make a finding as to the conspiracy charged, together with findings which would disclose how each of the petitioners became a member of the conspiracy. In support of their contention, the petitioners argued that the portion of the finding in which the commission says "the capacity tendency and effect of the combination and conspiracy maintained by the petitioners and the acts and practices performed thereunder and in connection therewith has been and is, to hinder, lessen, restrain, and suppress competition in the sale and distribution of conduit" is wholly insufficient in law, because the finding is only a description of the capacity tendency and effect of the conspiracy.

Cites Cement Decision—After citing decisions in a number of cases, the appellate court said, with reference to the recent U. S. Supreme Court decision in the cement case: "In disposing of the identical question, the court solved our problem. It said—'It seems impossible to conceive that anyone reading these findings in their entirety could doubt that the commission found that respondents collectively maintained a multiple basing point delivered price system for the purpose of suppressing competition in cement sales. The findings are sufficient. The contention that they are not is without substance.' "

Deny Unfair Competition — Concerning the count that each corporate petitioner and others violated Section 5 of the FTC Act through concurrent use of a formula method of making delivered price quotations with the knowledge that each did likewise, the petitioners contended that the individual use of the basing point method, with knowledge that other sellers use it, does not constitute an unfair method of competition. They argued that individual freight absorption is not illegal per se, that the commission's order is a denial of the right to meet competition, and that it is for the court to decide as a matter of law what constitutes an unfair method of competition under Section 5 of the FTC Act.

The FTC had contended that unfair methods of competition include not only methods that involve deception, bad faith, and fraud, but methods that involve oppression or such as are against public policy because of their dangerous tendency unduly to hinder competition or create monopoly.

Again the appellate court referred to the recent cement case, and said: "In this situation (rigid conduit case), and indeed all parties to these proceedings agree, the legal question presented is identical with the cement case.

"In the light of that opinion," asserts the appellate court in the rigid conduit case, "we cannot say that the commission was wrong in concluding that the individual use of the basing point method as here used does not constitute an unfair method of competition."

Petitioners for review of the FTC order in the rigid conduit case were: Triangle Conduit & Cable Co. Inc., the M. B. Austin Co., Enameled Metals Co., Steelduct Co. and Lawrence R. Quinn, Clayton Mark & Co., Fretz-Moon Tube Co. Inc., Laclede Steel Co., National Electric Products Corp., Republic Steel Corp., Walker Bros., Youngstown Sheet & Tube Co., James M. Barton, I. A. Bennett and Hervey S. Walker, General Electric Co. and General Electric Supply Corp., Spang Chalfant Inc., and H. G. Morrow.

Alcoa To Build Plant Near Port Lavaca, Tex.

Aluminum Co. of America, Pittsburgh, will erect an aluminum-producing plant at Point Comfort, near Port Lavaca, Texas. The new plant will use natural gas for the generation of electric power required for aluminum production. The plant site is on Matagorda Bay, in the area between Houston and Corpus Christi, and comprises over 3000 acres of land.

Alcoa installations at Point Comfort will include a smelting or reduction plant with two potlines, in which aluminum will be produced from purified aluminum ore; a plant for manufacture of carbon electrodes required in the electrolytic aluminum-producing process; a power plant for the generation of required electricity; docking and other general service facilities. Construction will begin soon, and the project will be completed in about two years.

Pacific States Pipe Plans Foundry at Provo, Utah

Pacific States Cast Iron Pipe Co., Provo, Utah, will construct a $2.5 million foundry addition to its plant at Provo. Pig iron will be supplied by Geneva Steel Co.

The 110,000 sq ft foundry will enable the company to produce longer and larger diameter pipe. The new plant will house a centrifugal casting foundry, supplanting present sand casting facilities.

Sees Trade Groups Doomed

Trade commissioner says hazards of membership will outweigh legitimate advantages. Says cement decision outlaws basing point pricing, freight absorption, etc.

TRADE associations suffered possibly a fatal blow in the Supreme Court's decision in the cement case, in the opinion of Lowell B. Mason, member of the Federal Trade Commission.

"If the laws stand as they now are, I predict trade associations are out. At least, the present administrative trend will make life so uncomfortable for members of associations that the hazards of membership will hardly be worth any legitimate advantages."

Mr. Mason, speaking at the Harvard School of Business Administration, said the court's decisions in the cement and glucose cases, point to many far-reaching changes in business practices. His interpretation is the first to be offered by a member of the FTC.

Multiple Basing Point Pricing Out—Mr. Mason said he believes the court's decision throws out multiple basing point pricing as a matter of law.

"Also, I believe it is out as a matter of plain economics. I think there are more businessmen in this country who would welcome a mill base at every point of production than there are businessmen who wish to maintain either the Pittsburgh plus or the multiple basing point system.

"I believe that freight absorption is out. By that I mean that it will be a violation of the law for anyone to use a systematic pricing system which allows him to pay the freight out of his own pocket in order to sell in a competitor's territory. By this I don't mean that a salesman can't make an off-the-cuff bid in a specific case to meet a competitor's price, but a large producer selling thousands of items and employing thousands of salesmen is in no position to let his individual salesmen free lance on his own pricing structure. Therefore, I say freight absorption is out. This affects every basic industry in the United States."

Heavy Products Affected First—"Government will probably first attack the pricing system of those heavy commodities where the freight is a large percentage of the cost of the article to the purchaser, such as: Iron and steel, rubber, builders' supplies, farm equipment, road machinery, auto parts, reinforcing materials, antifriction bearings, construction machinery and coal.

"I believe zone prices are out. Zone prices are necessarily part of a systematic pricing system and by their very nature must entail individual price discrimination which, when inaugurated through systematic pricing, create a discrimination which is banned by these decisions . . .

"I believe that an individual universal delivered price system is out."

Looking ahead, and assuming the

LOWELL B. MASON

law as interpreted by the court will be universally enforced, Commissioner Mason made some further predictions and commented in philosophic vein as to probable results.

No More NRA—"In my opinion, Congress will never legalize any price fixing system provided they know what they are doing. In other words, there will never be another quid pro quo between industry and labor such as the NRA, leaving the consumer in the middle. The present anti-inflation law which gives industries the right to establish quotas, inventories, etc., under a system of personal waivers will never be effectively operated during peacetime.

"Hereafter, anyone who wants will be able to take factory delivery on anything he wants to buy. This will, of course, be modified by the Clayton Act which says that the producer can always choose whom he will sell to. Thus producers may confine themselves to territories where they won't have to discriminate in price in order to get a share of the pie.

"Mills will refuse to quote in many areas where they have heretofore been marketing. In a seller's market, the cement decision will give a legitimate excuse for dropping small customers who have heretofore been serviced on a historic basis rather than on a profit basis. By this I mean that a customer who has heretofore been able to buy from a producer who absorbed the freight costs will now find the producer saying, 'You pay the freight.' "

Sees Industry Shift—"There will be a decentralization of users of basic products. Fabricators will gravitate to the points of production of their basic materials. With each producer a basing point, the more basing points we have, the more fabricators there will be to surround each separate basing point. This decentralization will not come from the desire to be virtuous. It will come from the economic fact that freight rates today have shortened a profitable 60-mile freight absorption down to 15.

"I predict that there will be an amendment to the Robinson-Patman Act so that the variances in profit or mill net will not be the ear-mark of discrimination . . .

"Some of these predictions I interpret very cheerfully. Decentralization is not only a military but an economic necessity. But unless some of my other predictions come true, I can see nothing but a decadent economy controlled by an aggressive central government. The businessman who is prohibited by government from having any direct part in the development of commercial justice has little interest in the law except to avoid its clutches.

"Speaking generally, and not with specific reference to the two decisions I have just discussed, we are unobtrusively assembling a compilation of central control. Its precedents are quietly established against minor activities of big companies and the major activities of minor companies. Thus we do not raise too much rumpus in our erosion of private responsibilities. But if all the inhibitions that we now have on the books were fairly and equally applied, the American businessman would cry out for the liberties of a Russian peasant."

Stevens Institute Forms Metallurgy Department

Stevens Institute of Technology, Hoboken, N. J., will establish a department of metallurgy on July 1, to take over work in the metallurgical field now being carried by the chemistry department. The new department will have an initial staff of six.

Allocations Program Limited

Justice Department rules steel for rearmament and foreign aid not covered by voluntary allocations bill. Changes in Public Law 395 suggested

HOW TO GET increased allocations and priorities power, for some time a hot problem of top government officials, has become even more so with a Justice Department ruling that the voluntary allocations program may not cover steel for rearmament and foreign assistance.

Under Justice Department interpretation, participants in voluntary allocations programs which involve industry agreements under Public Law 395 are not immune from antitrust laws unless these agreements are aimed at fighting inflation.

What most government men would like is broadening of Public Law 395 to cover allocations for rearmament, stockpiling and foreign assistance. Majority opinion is that with the voluntary allocations system working so well in steel, desired results could be obtained by getting Congress to amend Public Law 395 to permit voluntary allocations for any purpose with antitrust law immunity as long as the allocations are under government supervision. However, in view of President Truman's recent request for standby mandatory control authority, nobody in the administration can ask broadening of the voluntary allocation authority from the Republican Congress which enacted the measure.

Ask 3-Stage Controls — The White House has received from the National Security Resources Board a proposal to ask Congress for a law providing three sets of controls: 1. Limited priorities and allocations for the rearmament stage which the nation is now entering; 2. broader controls for emergency; and 3. full controls for actual war. This proposal has aroused considerable opposition in the administration because of inference the board wants these controls for its own use. President Truman is reported to have referred the proposal to his assistant, John R. Steelman, for investigation and report.

Sweeping Power Proposed — Meanwhile, administration assistants are studying the House selective service bill which would give the President sweeping power to place orders with any individual or corporation for military supplies. Anyone failing to accept such orders would be guilty of felony.

A Commerce Department official told STEEL that "if industry wants to avoid eventual adoption of a mandatory allocations system, its best course is to get Congress to enlarge the scope of Public Law 395."

The recent Justice Department ruling that antitrust law immunity for participants in industry agreements under Public Law 395 is good only when the allocations under these agreements are aimed at fighting inflation is based on the following lan-

SHIPMENTS OF STEEL PRODUCTS FOR MARCH AND YEAR TO DATE

Steel Products	Number of companies	Items	MARCH - 1948			To Date This Year			Whole Year 1947		
			Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	Per cent of Total Shipments	Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)	Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	Per cent of Total Shipments	Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)	Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	Per cent of Total Shipments	Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)
Ingots, blooms, billets, tube rounds, sheet and tin bars, etc.	43	1	324,129	5.4	242,395	904,157	5.5	732,893	* 2,966,748	* 4.7	*2,396,343
Structural shapes (heavy)	12	2	382,436	6.4	2,454	1,040,634	6.3	8,213	4,436,129	7.0	2,640
Steel piling	4	3	31,719	0.5	-	78,273	0.5	8	324,224	0.5	23
Plates (sheared and universal)	29	4	630,339	10.5	40,537	1,697,031	10.3	104,171	6,345,216	*10.1	219,227
Skelp	6	5	16,870	0.3	44,129	40,879	0.3	119,887	160,989	0.3	384,004
Rails—Standard (over 60 lbs.)	4	6	186,381	3.1	740	510,715	3.1	3,253	2,207,146	3.5	991
—All other	5	7	19,689	0.3	37	68,153	0.4	404	211,900	0.3	329
Joint bars	7	8	14,658	0.3	3,665	36,571	0.2	9,229	173,923	0.3	15,198
Tie plates	7	9	48,671	0.8	8	126,031	0.8	179	504,779	0.8	4,437
Track spikes	8	10	13,937	0.2	66	35,672	0.2	90	163,746	0.3	146
Hot Rolled Bars—Carbon	34	11	560,106	9.4	55,780	*1,599,633	9.7	162,705	6,242,416	9.9	745,770
—Reinforcing—New billet	16	12	123,133	2.1	645	335,697	2.0	1,914	1,277,075	2.0	9,775
—Rerolled	13	13	14,903	0.2	-	* 40,640	0.3	-	175,833	0.3	-
—Alloy	27	14	172,747	2.9	26,012	* 476,878	2.9	56,643	1,741,452	* 2.8	212,382
—TOTAL	44	15	870,889	14.6	82,437	*2,452,848	14.9	221,262	9,436,756	*15.0	967,927
Cold Finished Bars—Carbon	27	16	125,175	2.1	222	351,563	2.1	973	1,426,701	2.3	9,249
—Alloy	26	17	18,910	0.3	668	50,844	0.3	1,253	218,802	0.3	2,601
—TOTAL	35	18	144,085	2.4	890	402,407	2.4	2,226	1,645,503	2.6	11,850
Tool steel bars	18	19	7,000	0.1	132	19,921	0.1	306	87,279	0.1	1,670
Pipe & Tubes—Butt weld	15	20	176,202	3.0	3,265	* 491,435	3.0	7,109	1,892,691	3.0	78,080
—Lap weld	8	21	32,925	0.6	-	93,752	0.6	-	389,762	0.6	875
—Electric weld	13	22	138,452	2.3	562	382,007	2.3	1,234	1,254,325	2.0	4,274
—Seamless	16	23	265,003	4.4	17,763	703,682	4.3	44,849	2,581,106	4.1	157,208
Wire rods	19	24	58,878	1.0	28,587	171,496	1.0	78,425	667,282	1.1	331,192
Wire—Drawn	39	25	242,449	4.1	15,970	684,760	4.2	46,143	2,590,963	4.1	181,783
—Nails and staples	17	26	78,858	1.3	1,048	216,587	1.3	3,699	799,436	1.3	8,481
—Barbed and twisted	14	27	23,032	0.4	-	68,251	0.4	28	256,991	0.4	128
—Woven wire fence	12	28	34,940	0.6	305	100,656	0.6	752	407,295	0.6	3,616
—Bale ties	11	29	10,673	0.2	-	30,497	0.2	-	119,917	0.2	-
Black Plate—Ordinary	9	30	72,332	1.2	50	196,211	1.2	562	801,745	1.3	2,033
—Chemically treated	1	31	1,147	-	-	2,312	-	-	19,252	-	-
Tin and Terne Plate—Hot dipped	8	32	221,470	3.7	-	487,552	3.0	72	2,093,149	3.3	228
—Electrolytic	9	33	171,241	2.9	-	419,909	2.6	215	1,617,659	2.6	529
Sheets—Hot rolled	32	34	693,306	11.6	57,251	*1,957,563	11.9	169,866	7,891,798	12.5	578,426
—Cold rolled	16	35	572,927	9.6	698	1,635,143	10.0	5,158	5,504,578	8.7	28,498
—Galvanized	16	36	144,069	2.4	190	400,582	2.4	727	1,609,881	2.5	889
Strip—Hot rolled	22	37	141,155	2.4	29,193	423,213	2.6	86,687	1,740,085	2.7	308,655
—Cold rolled	33	38	158,220	2.6	2,234	431,730	2.6	5,994	1,613,005	2.6	28,030
Wheels (car, rolled steel)	5	39	31,131	0.5	108	79,675	0.5	324	356,873	0.6	2
Axles	5	40	19,338	0.3	6	47,671	0.3	74	185,019	0.3	53
All other	-	41	-	-	-	-	-	-	-	-	-
TOTAL STEEL PRODUCTS	140	42	5,978,551	100.0	574,720	*16,437,976	100.0	1,654,039	*63,057,150	100.0	*5,717,765

* Adjusted.

guage of that law: "The purposes of this joint resolution are to aid in stabilizing the economy of the United States, to aid in curbing inflationary tendencies, to promote the orderly and equitable distribution of goods and facilities, and to aid in preventing maldistribution of goods and facilities which basically affect the cost of living or industrial production."

Neither rearmament nor foreign assistance needs are considered as falling within the meaning of this statement of purposes.

Limitations Provided — Therefore, the only needs that may be taken care of under voluntary agreements are those which, under Executive Order 9919, are certified by the secretaries of Commerce, Agriculture and Interior, and by the Office of Defense Transportation as necessary in the fight against inflation.

Up to now the needs certified as qualifying for voluntary allocations under industry agreements include those for freight cars; for petroleum, gas and oil equipment; for housing construction; and for agricultural equipment. And up to now the only basic-materials producing industries invited into voluntary allocations agreements are those which produce steel, pig iron, soda ash and caustic soda.

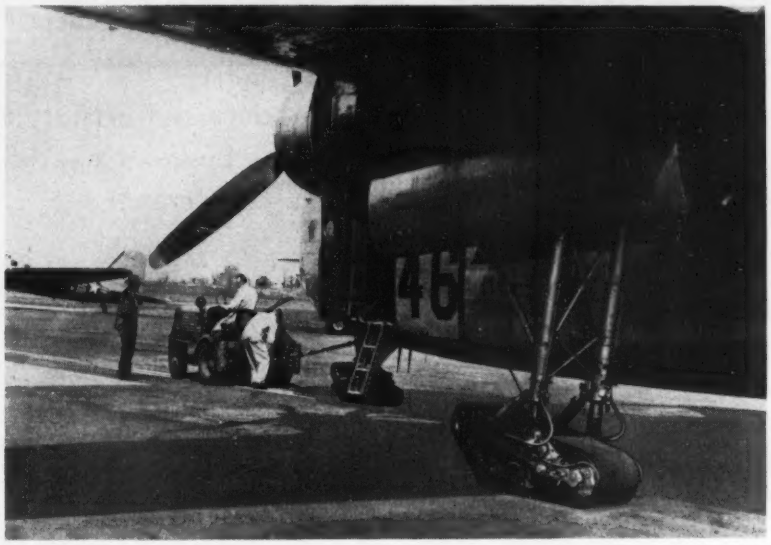
Another development of the past week was the revival by the Department of Agriculture, of the request for an allocations program to provide steel for expanded production of a number of types of agricultural machinery, particularly tractors and tractor-mounted accessories. If this request is executed, it will result in placing approximately an additional 1,250,000 tons of steel under allocations. This figure, which would represent total steel consumption for agricultural machinery production on an annual basis, at the expanded rate, compares with around 1,100,000 tons actually consumed in this industry in 1947. Thus a net increase of about 150,000 tons annually is contemplated in this field.

Steel Figures Revised — As a result of some recasting of figures last week, the total amount of steel that may be placed under voluntary allocations now comes to 8,172,000 net tons. This includes these programs which already have been placed: 3 million tons for freight car construction and repair; 160,000 tons for needs specified by the Atomic Energy Commission; and 212,000 tons for the warm air furnace manufacturing industry for increasing housing construction. It includes these additional programs which now are under consideration: Housing, petroleum and agricultural equipment needs coming to 4,800,000 tons.

On the basis of latest revised figures, the total allocations requests of 8,172,000 tons represent an increase of only about 2 million tons of steel for the affected consuming industries as compared with what they consumed in 1947.

Informed opinion is that this is substantially the final picture.

Commerce Department spokesmen familiar with current steel requirements are not expected to ask Congress for new legislation under which steel requirements for rearmament and foreign assistance other than in tin plate could be allocated. While no definite figures have been compiled for either of these brackets, indications are that neither of them will call for steel on a scale that would cause difficulties. The contemplated steel exports after the foreign assistance program gets rolling will be less than the 1947 total of 6,500,000 tons. The rearmament program, as now apparent, will not take any huge tonnages of steel.



TRACK-TYPE LANDING GEAR: Dubbed the "Flying Runway," this new track-type landing gear is receiving consideration by the Air Force as an alternative to constructing costly runways for the new very heavy bombers and transports. The gear is now undergoing landing, takeoff and taxi tests on this Fairchild C-82 transport. By distributing the plane's weight over a greater runway surface than is possible with tires, the endless rubber belt landing gear will enable the heaviest aircraft to land on present runways. It was developed by Firestone Tire & Rubber Co.

Conference Board To Discuss Communism

"The American Answer to Communism" will be the topic of discussion at the general session of the 32nd annual meeting of the National Industrial Conference Board at the Waldorf-Astoria Hotel, New York, Wednesday, May 26.

The session will be held in the evening, with Virgil Jordan, president, the Conference Board, presiding as chairman.

Whitehead Metal Holds 3-Day Welding Exhibit

A 3-day welding exhibit and clinic was held recently at the headquarters of the Whitehead Metal Products Co., 303 West 10th Street, New York.

Exhibits by manufacturers included techniques for welding and brazing by gas, electric heli-arc, induction, gas and air and resistance methods.

C. D. Grover, vice president, Whitehead Metal Products, reported substantial sales in welding equipment and a sharp upturn in sales of high nickel alloys.

The welding industry equipment spokesmen said that several companies with large jet propulsion and gas turbine contracts have recently entered the market for new equipment, in large part because of requirements occasioned by the use of new high temperature metals. It was also brought out that among new buyers of welding equipment were makers of aluminum wing tanks for jet aircraft.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

Cement decision may prompt producers of primary materials to buy out customers whose business they need. Effect would be direct opposite of that intended

SUPREME Court's cement decision, coming in the wake of the Corn Products and Clayton rulings, may lead to an effect the very opposite of the intent of Congress in passing antimonopoly and fair trade legislation, and of the Federal Trade Commission and the courts in enforcing and interpreting it.

Generally it is assumed that the three decisions call for a policy of selling f. o. b. at each producing plant, or of being willing to sell f. o. b. mill whenever requested to do so by a consumer, with consumers paying the freight charges. One deviation is permissible—that is, in individual instances where a producer absorbs freight "in good faith" in order to meet a lower price quoted by a competitor.

The decisions, of course, play into the hands of producers located close to important consuming areas. They add to the difficulties of more distantly located producers because the latter no longer can pursue the old policy of quoting competitors' delivered prices rather than their own f. o. b. mill prices.

A rather simple way out of this seeming impasse, in the opinion of some lawyers, is through the purchase of those customers whose business the producers need to keep going. The steel companies which now are in less desirable locations as a result of the Supreme Court decisions, for example, can help themselves out of their difficulty by outright purchase of judiciously selected customers. On steel shipped to their wholly owned manufacturing plants there would be no price in commerce; the only price would be that at which the final fabricated product was sold.

This procedure naturally would step up a trend that has been in progress for many years—that is the trend on the part of steel producers to acquire in whole or in part more and more of their important fabricating customers. Some Washington business spokesmen, who have considered this angle, warn that any steel manufacturer who seeks to improve his position by the acquisition of customers will be well advised to be able to prove that such action was resorted to in good faith, and not intended merely to kill off competition. He also may find himself in trouble if he acquires ownership of fabricating interests for the purpose of "evading" compliance with a cease-and-desist order.

Washington business spokesmen also foresee the possibility that the cement decision will cause more manufacturers to acquire or build warehouses in strategic market locations. Steel producers who have been absorbing freight in meeting the delivered prices of competitors are expected to market more of their steel output through wholly owned warehouses so as to minimize their loss of business and at the same time sell more of their output at warehouse prices.

If these two trends are stepped up, steel companies acquiring more fabricating customers and acquiring or building more warehouse distributing depots, then the net effect would be to make big companies still bigger —and possibly to add to the difficulties of small consumers.

CHARTER FOR ASA

Bill to grant a federal charter to the American Standards Association, 70 East 45th street, New York, has been introduced by Rep. Kenneth B. Keating (Rep., N. Y.). At present, ASA is an unincorporated body. As a federation of 72 technical societies, trade associations, and governmental agencies, it is generally recognized as the country's responsible organization in the overall field of standardization. Mr. Keating points out that a federal charter would eliminate present legal objections to participation by government agencies in the work of the ASA.

Bogota Objective Gained

Having succeeded in gaining their most important objective at the recent Bogota conference—namely, agreement that when a country expropriates property of foreign investors it will reimburse the foreigners—State and Commerce officials are getting ready for the next conference of western hemisphere nations, to be held at Buenos Aires late this year.

The main features to be again presented for action then are the programs to provide adequate physical facilities for handling economic and commercial dealings between the Americas. Of principal importance on the agenda will be the attempt to set up three international corporations in final form and pave the way for their speedy creation. They are the Inter-American Bank, the Inter-American Development Corp. and the Inter-American Commercial Corp.

Reviewing the Bogota accomplishment, a State Department spokesman told STEEL:

"The Economic Agreement of Bogota is notable because it goes a long way in establishing the kind of relationship necessary to make for smooth co-operation over the long future. The really important thing accomplished at Bogota is the agreement on Chapter IV entitled 'Private Investments.' Under this agreement, United States citizens can invest in railroads, mines, manufacturing plants and in business enterprises generally in Latin America with the assurance that their investments will be safe."

The key paragraph in Chapter IV reads: "Foreign capital shall receive equitable treatment. The states therefore agree not to take unjustified, unreasonable or discriminatory measures that would impair the legally acquired rights or interests of nationals of other countries in the enterprises, capital, skills, arts or technology they have established or supplied."

Another important paragraph in this chapter commits the Latin American countries to a policy of offering incentives "for the investment and reinvestment of foreign capital" and to recognizing that investors should be permitted to earn a "legitimate" profit on their investment.

Another paragraph which between the lines shows how far United States thinking influenced the international delegates reads: "The states declare their intention to promote sound investment by developing, whenever possible and in accordance with the laws of each country, uniform principles of corporate accounting, and of standards of fair disclosure to private investors." In other words, the eventual purpose is a super network of agencies on the order of

McKAY

BACKED-UP ROLLER LEVELERS

FEATURES

mpact design reduces required
r space.

adjustments are readily ac-
sible to the operator.

urate indicating dials are pro-
ed for the screwdowns.

Alloy steel Helical gears are used throughout — fully enclosed and running in oil.

Drive is through Universal couplings.

One-shot lubrication system.

Rugged construction insures continuous performance and low maintenance cost.

The McKAY

Backed-Up Roller Leveling Machine has extraordinary rigidity because its small diameter work rolls are supported by backing-up rolls. This type of leveling works the sheet more thoroughly.

Sheets processed on this type of leveler are strain relieved to a greater extent and have far superior stamping and drawing qualities than those processed by the ordinary leveler.

The McKAY MACHINE Company

ENGINEERS AND MANUFACTURERS OF SHEET, TIN, AND STRIP MILL EQUIPMENT

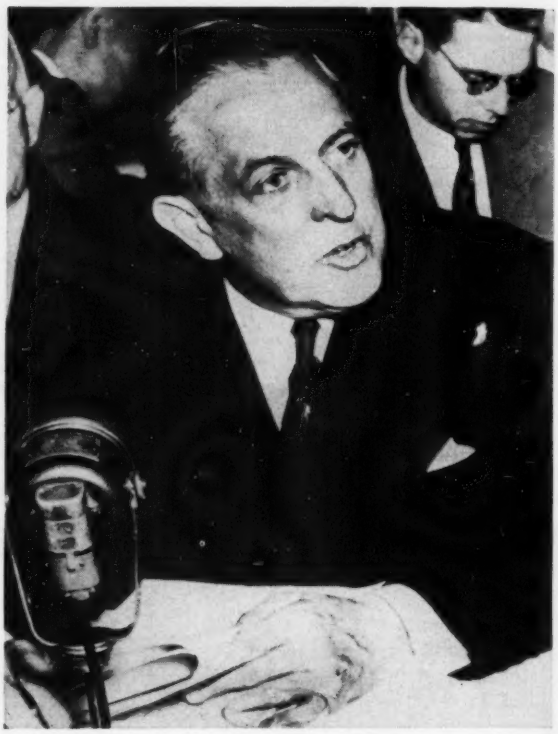
YOUNGSTOWN, OHIO

ASSOCIATED COMPANY The WEAN ENGINEERING CO., Inc. • WARREN, OHIO

PERFORMANCE
RUGGEDNESS
PRECISION AND
SAFETY

our Securities & Exchange Commission to keep western hemisphere business on a high ethical plane.

In general the Economic Agreement of Bogota is in tune with the principles previously agreed on in the Charter of United Nations, the Economic Charter of the Americas, and the Charter of the Organization of American States. Here are some of the chapter titles: "Technical Co-operation," "Financial Co-operation," "Private Investments," "Co-operation for Industrial and Economic Development," "Economic Security," "Social Guarantees," "Adjustment of Economic Disputes," "Inter-American Travel," "Maritime Transportation," "Freedom of Transit."



ALLOCATES AID: A breakdown of the assistance to be extended western European nations through June 30 was announced last week by Paul Hoffman, head of the Economic Co-operation Administration. Eleven countries will receive $908 million in grants and $278 million in repayable loans. Recipients of the greatest amount of aid will be Britain, France, Italy, the Netherlands and Austria.
NEA photo

Franchise Tax Modified

Many suppliers to the government will benefit from the action of Congress in amending the District of Columbia franchise tax act. The amending bill was signed into Public Law 509 by President Truman on May 3.

When the franchise tax act originally was translated into Public Law 195 in July of 1947, it provided for an onerous tax on concerns outside the district, and many manufacturers declared this tax provision would prevent or discourage them from doing business with the government. In particular, many sources of supply for the Army, Navy and Air Force were in danger of being closed off.

There were two bad features under Public Law 195. First, it placed a tax of 5 per cent on the net income from the sale of goods located outside the district to buyers in the district who take title in the district, and imposed a tax of 5 per cent on half the net income from the sale of goods outside the district to a buyer in the district, and where the sale of goods resulted from solicitation in the district.

The other bad feature was the latitude given the district tax collector in deciding how far he thought he was entitled to apply these taxes on nonresidents of the district. Some legal authorities held that he could collect a tax on any business resulting from solicitation or negotiation in Washington even though the goods, for example, might originate in Chicago and be shipped to the Mare Island Navy Yard in California. There seemed good ground to fear that he had the power, for example, to tax the profits on a battleship placed under contract in Washington and built in New Jersey.

As amended by Public Law 509, the tax on profits cannot be levied against outside companies which have no office, agent or representative in the district, and whose only activity in selling is to send salesmen into the district from outside.

Exempted also are concerns that conduct an office or representation in Washington for the sole purpose of doing business with the United States government; however, these concerns still must buy a $10 annual license for the privilege of doing business with the United States through their own Washington representatives.

A fine opportunity for independent brokers to expand their operations is created by Public Law 509, which has the effect of encouraging manufacturers to sell through such third parties. Any manufacturer outside the district can do business in the district through such brokers without tax liability and without the necessity of paying a franchise tax.

New tax regulations are being compiled by the District of Columbia Commission as a result of Public Law 509 and should be ready for distribution to interested businessmen in a week or two.

RFC Extended to 1954

After living for months in a state of suspense, the personnel of the Reconstruction Finance Corp. have been assured of an extension of the life of that agency until June 30, 1954, plus two additional years for liquidation. The Senate on May 13 approved and sent to the White House the conference bill previously approved by the House, which cuts the RFC's lending capacity from $2 billion to $1.5 billion and reduces the surplus from $550 million to $250 million. The act gives the RFC practically the same broad authority as before "to aid in financing agriculture, commerce and industry, to encourage small business, to help in maintaining the economic stability of the country, and to assist in promoting maximum employment and production."

May Continue Scrap on Free List

Now on the House union calendar for action this session is a bill by Rep. Robert A. Grant (Rep., Ind.), H. R. 6242, which would continue until July 1, 1949, the present suspension of import duties on scrap iron, scrap steel, and nonferrous metals.

Air Academy Proposed

A United States Air Academy which would be to the Air Force what Annapolis is to the Navy and West Point to the Army would be created under a bill, S. 2645, introduced by Sen. James P. Kem (Rep., Mo.). He proposes an inland location comparatively immune to enemy attacks. Specifically he recommends that it be established at the Sedalia, Mo., wartime air base which is distant from large centers of population and is handy to the Lake of the Ozarks for training with flying boats.

Industry Mobilization Planning

National Security Resources Board speeding up program through revision of organizational functions. Shifting strategic plans presents difficulties

THE JOB of planning industrial mobilization for a possible war, which has been going slowly, is to be speeded up through revision of the organizational functions of the National Security Resources Board.

Up to now the board has met with difficulties due to shifting strategic plans of the armed services, and owing to uncertainties as to what size and type of rearmament program Congress would approve. The board also has been held up in its work by the extreme difficulty of attracting competent men to its staff.

General Regrouping — Arthur M. Hill, chairman of the Resources Board, last week announced general regrouping of organizational functions of this staff with a view to greater efficiency of the board. Mr. Hill created the office of Vice Chairman of the Board, and the vice chairman, with staff assistance of the Director of Plans & Programs and the Director of Mobilization Procedures & Organization, will direct, co-ordinate and administer the work of four newly created operating offices comprising the Mobilization Planning Staff.

The Mobilization Planning Staff will be composed of the Office of the Director of Production, Office of the Director of Transportation & Storage, Office of the Director of Human Resources, and the Office of the Director of Economic Management.

Set Up Division — Last week, establishment of a Plans & Programs Division of the Board, with Ralph J. Watkins as director, also was announced.

This is the first step, Mr. Hill said, in a general rearrangement of assignments among the board's staff, in the light of several months' experience.

The new division, working as a staff unit, has been assigned broad functions designed to enable the board to assemble and analyze comprehensive information gathered by the board's staff from all departments and agencies of the federal government, both military and civilian, as well as from private research institutions and business organizations.

Functions — The division's new functions are divided into nine main categories as follows:

1. Integration of industrial mobilization planning with strategic planning.

2. The division will be responsible for the assembly, screening, and consolidation of military and civilian requirements for manpower, materials, fuels, power, transportation, end items, end products, components, production and equipment.

3. Assembly and consolidation of estimates of available resources.

4. Comparison of requirements and resources and the measurement of deficiencies. The division will be responsible for developing and recommending methods for overcoming deficiencies, as well as consolidating deficiency estimates by types of requirements and resources.

5. Recommendation of steps to meet deficiencies, including methods of increasing resources and advice as to the cut-back of programs in line with available resources.

6. Recommendations concerning when and what types of control mechanisms should be applied.

7. Recommendation as to balance and adjustment among economic, industrial and civilian mobilization plans and programs.

8. Provision of statistical information and advice to the staff of the National Security Resources Board.

9. Provision of economic information and advice to the staff.

On Part Time — Mr. Watkins, the director of the new division, has been associated on a part-time basis with the board since February. He will continue on the same basis on loan from his position as director of the Marketing & Research Division, Dun & Bradstreet Inc.

The new Plans & Programs Division will be composed of five branches, each headed, respectively, by a chief of program adjustment branch, a chief of programs branch, a chief of plans branch, a chief satistician, a chief economist and a special assistant to the director.

Patriotic industrialists will do well to take to heart an appeal made by Admiral Louis Denfeld, chief of naval operations, to members of the Navy Industrial Association.

"The advent of new weapons such as the atom bomb and the guided missile means that in the future we will have to be prepared to mobilize in a matter of days and weeks instead of months and years. . . If we are not prepared to prevent it, our next Pearl Harbor might well be Pittsburgh, Detroit, or Chicago."

Shorter Period — To shorten the period of preparation, Admiral Denfeld suggested that all sizable companies take action immediately in

Calendar of Meetings . . .

May 24-25, National Association of Sheet Metal Distributors: Spring meeting, Deshler-Wallick Hotel, Columbus, O. Association executive secretary is Thomas A. Fernley Jr., 505 Arch St., Philadelphia.

May 25, American Society of Body Engineers: Dinner meeting, Rackham Educational Memorial Bldg., Detroit. Society headquarters are at 100 Farnsworth Ave., Detroit.

May 26-27, American Iron & Steel Institute: 56th general meeting, Waldorf-Astoria Hotel, New York. Institute headquarters are at 350 Fifth Ave., New York.

May 27-29, Automotive Engine Rebuilders Association: 1948 annual convention, Hotel Statler, Buffalo. Association headquarters are at 415 N. Capitol Ave., Indianapolis.

May 27-29, Society for Experimental Stress Analysis: Spring meeting, Roosevelt Hotel, Pittsburgh. Society address is P.O. Box 168, Cambridge, Mass.

May 27-29, Copper & Brass Research Association: Annual spring meeting, The Homestead, Hot Springs, Va.

May 31-June 2, National Association of Purchasing Agents: Annual meeting, Waldorf-Astoria Hotel, New York. Association headquarters are at 11 Park Pl., New York.

May 31-June 5, American Society of Mechanical Engineers: Semi-annual meeting, Hotel Schroeder, Milwaukee. Society headquarters are at 29 W. 39th St., New York.

June 6-9, American Gear Manufacturers Association: 32nd annual meeting, The Homestead, Hot Springs, Va. Association executive secretary is Newbold C. Goin, Empire Bldg., Pittsburgh.

June 6-11, Society of Automotive Engineers: Annual summer meeting, French Lick Springs Hotel, French Lick, Ind. Society secretary and general manager is John A. C. Warner, 29 W. 39th St., New York.

June 7-11, Pittsburgh International Conference on Surface Reactions: Conference will be held at the Mellon Institute, Pittsburgh. Conference secretary is Richard Rimbach, 1117 Wolfendale St., Pittsburgh.

June 11-12, American Society of Metals: Sixth biennial Pennsylvania interchapter meeting of groups located wholly or partly in the state, State College, Pa.

June 16-18, Electric Metal Makers Guild: 16th annual meeting, Bethlehem, Pa. Secretary-treasurer of the organization is D. L. Clark, 39 Grasmere Rd., Lockport, N. Y.

June 18, American Foundrymen's Association: Annual meeting of association's technical correlation committee, LaSalle Hotel, Chicago. Association headquarters are at 222 W. Adams St., Chicago.

June 21-25, American Society for Testing Materials: Annual meeting and exhibit of testing apparatus and related equipment, Book-Cadillac Hotel, Detroit. Society headquarters are at 1916 Race St., Philadelphia.

June 21-25, American Institute of Electrical Engineers: Summer general meeting, Mexico City, Mexico. Institute secretary is H. H. Henline, 33 W. 39th St., New York.

June 28-July 1, American Electroplaters' Society: Annual convention and industrial finishing exposition, Ambassador Hotel, Atlantic City, N. J. Society headquarters are at 473 York Rd., Jenkintown, Pa.

designating personnel to work with the armed services in planning wartime loads for their plants.

The blunt fact is that a blitz attack probably would catch our industrial mobilization planners flat footed, for the planning that now is in progress will, from present indications, take a year or more to complete.

Gray Iron Shipments in March at All-Time High

Gray iron shipments in March totaled 1,169,085 net tons, a new all-time high and 37 per cent better than the best month during the entire war period, according to the Census Bureau, Department of Commerce.

The March record showed an increase of 14 per cent over February and 9 per cent over March, 1947, and represents shipments at an annual rate of over 14 million tons—about double the best prewar year. Shipments of gray iron castings for the first quarter totaled 3,257,870 net tons—up 6 per cent over the first quarter of last year. Unfilled orders for commercial jobbing castings at the end of March, 1948, amounted to 2,726,415 net tons.

Electroplaters Meet June 28 to July 1

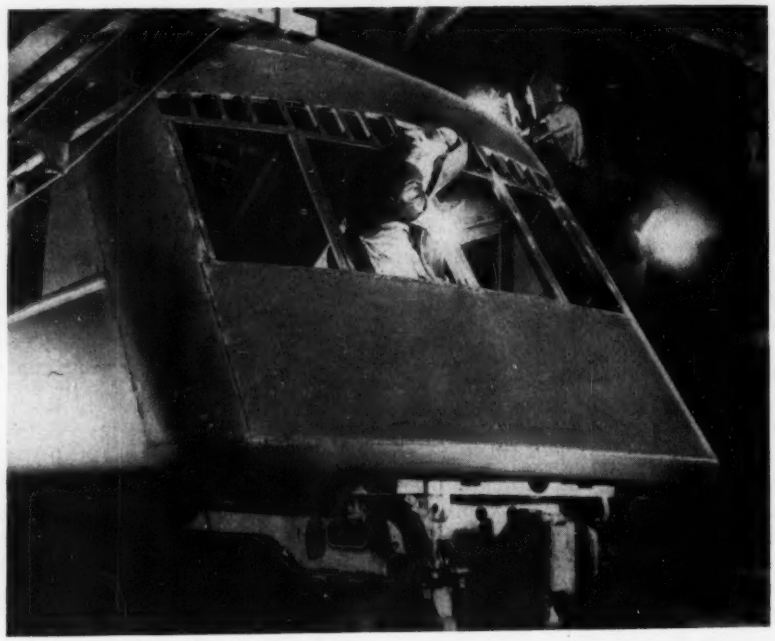
American Electroplaters' Society will hold its annual convention and industrial finishing exposition at the Atlantic City Convention Hall, Atlantic City, N. J., June 28 to July 1.

Charles L. Faust, Battelle Memorial Institute, will present a paper on industrial electropolishing, reviewing the factors which influence the decision to use or not to use electropolishing. Daniel Gray, Oneida Ltd., discusses electropolishing silver in cyanide solutions in his paper. R. H. McCahan and C. E. MacKinnon, E. I. duPont de Nemours & Co., describe how diaphragm tanks eliminate roughness in copper plating. In another paper, Robert Seegmiller and Vernon Lamb, National Bureau of Standards, write about the oxidation of trivalent chromium in chromic acid plating baths.

E. Paul Schwartz, L. C. Smith-Corona Typewriter Corp., in his paper presents the production costs, design and description of a conveyorized spray finishing system. F. A. Lowenheim, Metal & Thermit Corp., in his paper reviews the work which has been reported on the electrodeposition of the "uncommon" metals. Nelson F. Murphy and Michael A. Streicher, Virginia Polytechnical Institute, discuss the importance of acid ratio in the phosphatization of steel in their paper. Metal cleaning is the subject for George B. Hogaboom, consultant.

In another paper, R. A. Dimon, Carnegie-Illinois Steel Corp., describes two types of a circulating electrolyte cell for strip plating evaluation. A. Kenneth Graham, Graham, Crowley & Associates Inc., reports on plating copper-zinc alloys. Harold Narcus, Electrochemical Industries Inc., is the author of a paper on the deposition of metals on plastics employing reduced copper films. William M. Phillips and F. L. Clifton, General Motors Corp., analyze the techniques in judging the quality of plated parts.

Abner Brenner and Seymour Senderoff, National Bureau of Standards, will describe the spiral contractometer, an instrument for the measurement of stress in electrodeposits. S. M. Martin, United Chromium Inc., has for his paper's subject engineering planning in the plating room.



High-Strength Steels Gain

TO ALLEVIATE the postwar steel shortage, metalworking companies increasingly are turning to the use of high-strength steels that permit the production of as many as one-third more finished products ton for ton than carbon steel.

Tonnage of high-strength steels shipped to customers currently is running 80 per cent ahead of last year, according to a survey made by the Carnegie-Illinois Steel Corp. Thomas J. Hilliard, sales vice president, says more customers than ever are substituting the low-alloy, high-strength steels in applications ranging from freight cars and auto parts to refrigerators, hot water tanks and other industrial and home uses.

In making refrigerator bodies, one manufacturer formerly used 220 tons of carbon steel to produce 12,000 wrap-around sheets (the body of the box). Now he produces the same number from 160 tons of high-strength steels.

A manufacturer of compressed gases found that 500 tons of high-strength steel sheets were sufficient for 10,000 propane cylinders, while the same tonnage of carbon steel made only 7500 cylinders. Substitution of the low-alloy steels made possible a saving of 31 cents per cylinder, including freight charge savings.

Mr. Hilliard estimates that at least half the industries handicapped by the steel sheet and strip shortage can help ease their production problems by taking advantage of the better grade of metal. Carnegie-Illinois has delegated special staffs of engineers and metallurgists to help steel users in adapting the low-alloy steels to their product.

Photo shows workmen welding a streamlined passenger car made from low-alloy, high-strength steel.

Scrap, Coke Retard U.K. Steel Output

BIRMINGHAM, ENGLAND

SUPPLY position in the British iron and steel industry continues difficult and frequently is brought before the House of Commons.

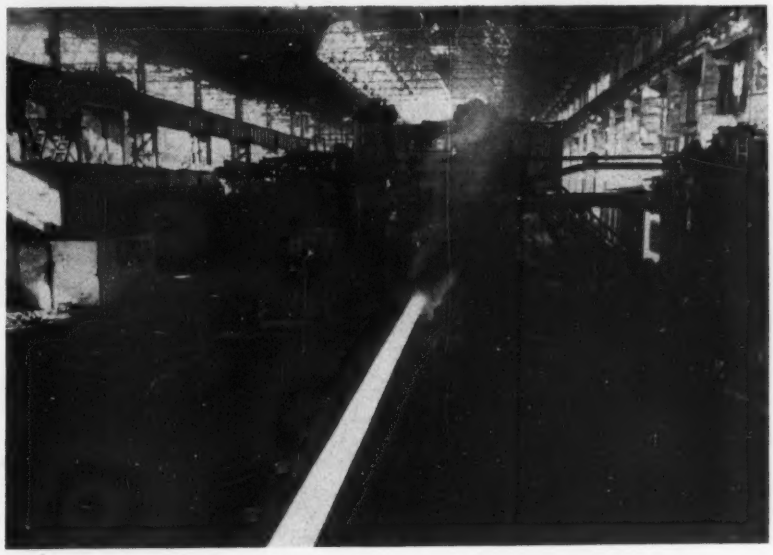
Recently the Iron & Steel Federation stated that the decline in stocks of scrap and pig iron was due to government failure to implement the program of imported scrap and coke supplies. Replying to this statement, Minister of Supply G. R. Strauss said he had found that complaints about shortages of materials holding up production came much more vehemently and even bitterly from the workers' representatives than from the management.

Productivity in the metalworking industries between January, 1946, and December, 1947, had increased by almost one-half. Coal-mining machinery production in the first two months of 1948 was up by 50 per cent over the last quarter of 1947. The only thing holding back the engineering industry was shortage of steel.

Statistics of production show that in the first three months of last year when ingot production was running at the rate of 11,232,000 tons per annum, iron and steel exports totaled 479,000 tons. During the first quarter of 1948 the production rate was raised to 14,932,000 tons per annum whereas exports were slightly lower at 456,000 tons. Obviously the extra output of nearly a million tons of steel in this period has been retained for home consumption.

Distribution Held Faulty — Many consumers consider that distribution has been faulty, but there are indications that some of the difficulties will be overcome as the new plan of authorization gets into its stride. Consumers no doubt have ordered bigger tonnages than they really need, but this was to be expected under conditions of emergency and shortages. British steel plants continue to operate at record levels.

Major expansion programs submitted for improvements in production of steel and pig iron by the Iron & Steel Federation and Joint Iron Council have been approved, and other schemes are still under consideration. The projects which include new blast furnaces and rebuilding of existing ones cover nearly 20 firms located in South Wales, the northeast coast, Lincolnshire and the Midlands. At Richard Thomas & Baldwins in Ebbvw Vale there will be a new coke oven battery and additional open-hearth steelmaking furnaces. There will be a replacement of blast furnaces and reorganization of the steelmaking plant at the Skinningrove Iron Co. on the northeast coast, and additional coke ovens and the provision of a third blast furnace at the Clyde ironworks of Colvilles.



RUSSIA REBUILDS ROLLING MILL: This rolling mill at the Dnieprozerzinsk steel works in southern Russia has been rebuilt after being destroyed during the war. Reconstruction, say the Russians, was completed 18 months ahead of schedule. Authenticated photo

More Scrap Sought — Strong efforts are being made to obtain more scrap for the steel industry, but the amount imported is still on a low level. During the last three months total purchases of scrap from overseas was just under 100,000 tons, whereas in the corresponding quarter of last year 336,000 tons were imported. Considering the great increase in consumption, stocks have fallen to a low point. The Minister of Supply states that measures are being taken to provide additional facilities for obtaining scrap from Germany, but consumers have not much confidence in this promise in view of the inability of the government to bring any large tonnage of material from Europe since the war.

Foundry pig iron continues in short supply and consumers have great difficulty in getting their full allocations against licenses.

Belgium, Luxemburg

Output of iron and steel in Belgium during the first quarter of 1948, compared with the corresponding quarter of 1947 was:

	1948	1947
	(Metric tons)	
Pig iron	926,280	647,930
Steel ingots & castings	933,640	666,230
Rolled products	726,870	567,770

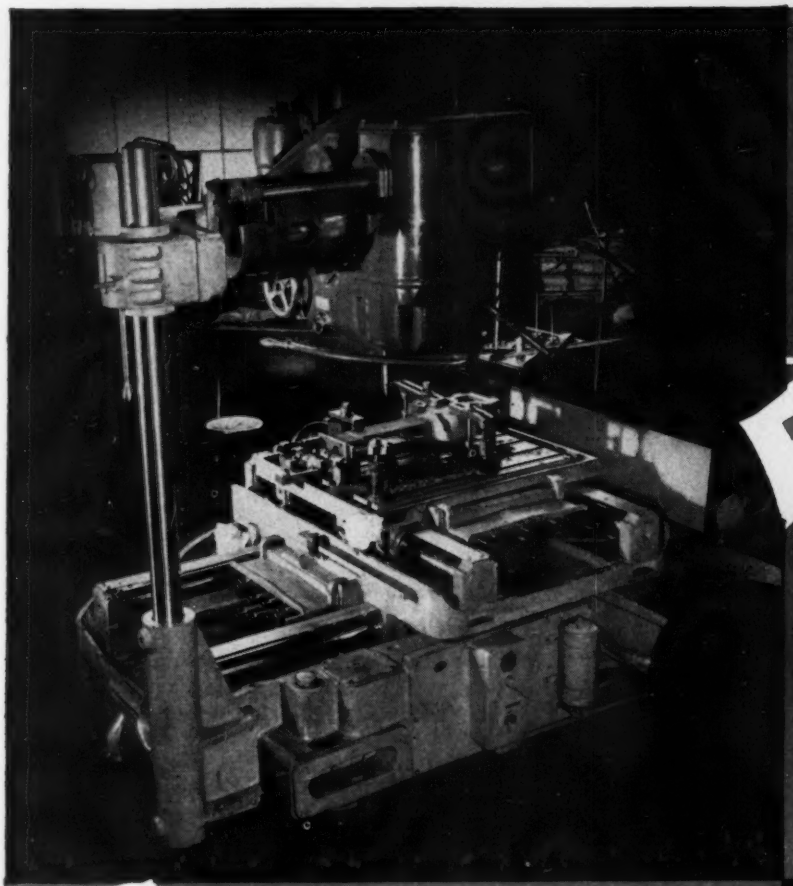
Exports of iron and steel from Belgium and Luxemburg in February were 209,290 metric tons, compared with 253,150 tons in January, and 148,705 tons in February, 1947.

Czechoslovakia

Plans are being prepared to build new blast furnaces in Slovakia, with a total capacity of about 500,000 metric tons of pig iron per year. Local iron ore will be used. The production of pig iron for Czechoslovakia as a whole was 137,025 metric tons in March.

Russia

State Planning Commission of Soviet Russia claims that in the first quarter of 1948 the output of iron and steel was 107 per cent of the production required by the current 5-year plan. The volume of capital work on new plant and equipment for the iron and steel and nonferrous metal industries was stated to be 116 per cent of the planned program. It was reported that the output of crude steel for this year would reach the prewar level, and this stage would be reached for production of pig iron in 1949.



PRODUCTION NEWS ABOUT BULLARD MAN-AU-TROL SPACERS

1.

HERE'S HOW ONE LOOKS IN ACTION AND WHAT THE USER SAYS

This is a BULLARD 30"x20" Man-Au-Trol Spacer being used by Kearney & Trecker, Milwaukee, Wisconsin with the following reported results: "We find that on parts where we do not have fixtures, the saving is considerable. We find that due to accurate positioning, we get more accurate work. We also find new uses every day; uses which we never thought of when we purchased the equipment".

HERE'S WHAT TWO OTHERS HAVE DONE

2.

AT HEPPENSTALL COMPANY, PITTSBURGH... PRODUCTION TIME CUT BETTER THAN 36%

Drilling and countersinking 13/16" diameter holes in this chipper knife used to take 95 minutes per piece for layout and drilling. The same job done with a BULLARD 30"x20" Man-Au-Trol Spacer, including setup time, takes only 60 minutes. According to C. W. Heppenstall, Jr., vice-president of this progressive firm, this new hole-locating method is "a real advancement in the science of metal working".

HOW MUCH CAN YOU SAVE?

Your first step toward learning how much you, too, can save in production time, jig fabrication and worker fatigue is to write for the latest Man-Au-Trol Spacer Bulletin. THE BULLARD COMPANY, Bridgeport 2, Connecticut.

BULLARD
MAN-AU-TROL
MASTER OF THE MACHINE

3.

AT R. HOE & CO., INC., NEW YORK CITY... OVER $2500 IN JIG FABRICATION SAVED IN 3 MONTHS

This maker of fine printing presses not only saved time on every job handled by a BULLARD Man-Au-Trol Spacer *but also* eliminated 75 hole-locating jigs in three months for a total saving of $2500 to $3000. Officials of R. Hoe & Co., Inc. further report that plans for constructing one of the world's largest presses for the Philadelphia Inquirer will require practically no jigs because of the use of the BULLARD 30"x20" Man-Au-Trol Spacer.

BULLARD CREATES *NEW METHODS* TO MAKE MACHINES DO MORE

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Chrysler purchasing officials attempt to keep materials and parts moving from suppliers' plants. Ask vendors to hold materials or to ship to local warehouses

DETROIT

IN ITS second week, the strike of 75,000 Chrysler Corp. employees went into its legalistic phase, with injunctions following injunctions and other court actions piling up daily. The UAW-CIO moved to make a court test of Michigan's Bonine-Trippe law which forbids strikes without a state-managed poll of employees being taken first, having earlier taken the position the law did not apply because Chrysler operated plants in other states.

Physically, there were the customary incidents involving flying fists and hurtling rocks, none yielding serious injuries. Center of combat was the Chrysler Highland Park plant where masses of pickets tried to blockade office workers and engineering department employees from entering the gates. The union's muscle men were imported "flying squadrons" from locals at other east side Detroit plants, not on strike, suggesting the apathy of Chrysler workers generally toward the whole affair.

No negotiations were in process leading to a settlement of the dispute. Company officials held to virtual silence, apparently waiting to see what the union's next move would be. Unconfirmed reports were circulated that the UAW would settle for an 11-cent hourly increase. The company originally had offered 6 cents which, together with the estimated 4-cent hourly boost accruing from lowered federal income taxes, would place the two parties only 1 cent apart.

Union Seeking Decision—However, the leaders of the UAW appear more interested in demonstrating their power than in effecting a settlement, so the walkout will drag on, some are guessing perhaps 30 days. Meanwhile Chrysler purchasing officials are making every effort to keep parts and materials moving from vendors. They are following three courses: 1) Asking suppliers to hold raw materials in banks pending fabricating and shipping instructions; 2) requesting sources to stock fabricated material until shipment is possible; 3) directing shipments to be made to local warehouses or freight terminals where they can be held until movement to plants can be arranged in some manner.

During the General Motors strike in 1946 warehouse space was rented all over Detroit and in other plant cities to stock materials, and the technique proved highly successful, although expensive. Since refusal to handle such material by other union members would constitute a secondary boycott, illegal under terms of the Taft-Hartley Act, not too much concern is being shown over possible UAW efforts to halt such storage activity. If the strike should drag on beyond 30 days, the problem would be considerably more acute, since by that time suppliers would be pressed for space to accommodate choked-up stocks and might be unwilling to continue the policy. Others might decide they would have to receive payments for fabricated materials, and Chrysler has never been too anxious to lay it on the line for purchase before they arrive at their destination. Passage of a month's time would see the accumulation of perhaps 100,000 tons of flat-rolled steel earmarked for Chrysler body stampings, and steel mills would be tempted to divert any further tonnage to other accounts clamoring for sheet and strip. In fact, some of the independent auto manufacturers are hopeful of an increase in their steel intake as a result of the Chrysler strike.

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

	1948	1947
January	422,277	366,205
February	399,432	393,636
March	519,112	443,588
April	460,964*	445,137
May	.....	404,191
June	.....	421,466
July	.....	400,944
August	.....	364,478
September	.....	444,501
October	.....	461,536
November	.....	417,493
December	.....	492,109
12 mos.	.....	5,055,284

* Preliminary.

Estimates for week ended:

	1948	1947
May 1	102,967	101,690
May 8	84,684	94,756
May 15	82,155	83,201
May 22	80,000	96,651

Estimates by Ward's Automotive Reports

Counter Offer Rocks UAW

In what is regarded as an exceptionally smart countermove to UAW-CIO demands for a wage increase approximating 50 cents an hour, Ford Motor Co. through industrial relations director John S. Bugas, has informed the union the company seeks to reopen economic issues of the labor agreement on five counts: 1) Elimination of the substantial wage differential (around 10 cents an hour) between Ford and major competitors; 2) establishment of wage rates in all branch operations throughout the country at community or area wage levels for comparable operations; 3) establishment of a sound, basic plan for extending the incentive system wherever practicable; 4) extension and liberalization of present practices relative to operations scheduled to work on Saturdays or Sundays; 5) elimination of payment by the company to union representatives for time spent on business activity of the union.

This was a bombshell which rocked the UAW back on its heels. It is smart because in a way it follows the union technique of drawing up a list of impossible demands and then bargaining between them and current conditions. Now the company sets its base somewhat below the present status and starts bargaining from there. Many Ford workers might well stop to think that if the company proposes these five new demands, maybe they would be better off to settle for the status quo. Infuriated UAW leaders of the Ford Local called the proposals "unreasonable, ridiculous, inimical to the welfare of the employees and of the community, and totally unacceptable." So what? The company can reply that the union's demands are likewise.

The suggestion is inescapable that other companies faced with union negotiations on economic issues might profitably first set up a few demands of their own and thus avoid the one-sided "bargaining" which has been on since 1937. Ford makes it clear that the proposals are set forth with

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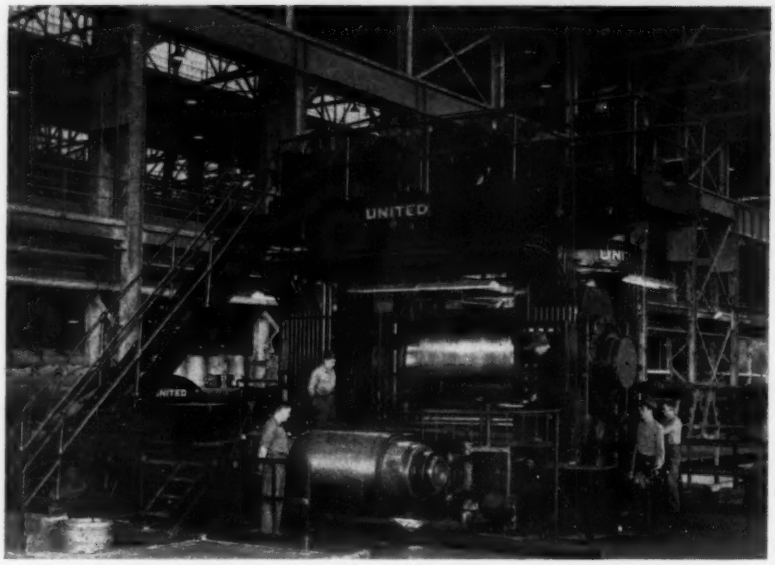


NEW FORD MILL: Recently installed in the steel mill at the Rouge plant of the Ford Motor Co., this 84-inch skin pass cold rolling mill was purchased from Granite City Steel Co. and rebuilt to accommodate wider stock required for auto body stampings

public security the objective in the belief the American people are "tired of negotiations which seem to have no other aim besides gain for all parties except the consumer." To this logic, the UAW weakly counters with a challenge that the company make public a complete and accurate financial report to prove that a wage increase would require an increase in the prices of Ford products. The old "ability to pay" argument again.

Union Will Not "Trespass"

Menacing growls echo from UAW locals in General Motors plants, particularly in the hot-bed Flint, Mich., area. The GM contract expires May 28, after being extended 30 days from its original termination, and a spokesman for the union cutely states his members will "not trespass" on General Motors' property after this time, if a wage agreement is not reached. The threat is not taken too seriously, since it appears an obvious effort to put more pressure on Chrysler to come through with an offer which will provide a national pattern for wage increases.

(Incidentally, an official at the very top level of the industry has given as his private and personal opinion eventual wage agreements involving an 8-cent hourly boost).

Packard Position Improves

Things keep getting better all the time out at Packard these days, thanks primarily to a solution of vexing raw materials problems. In the first four months of this year, 27,206 cars were built, against 16,020 in the same period last year. In mid-April the assembly rate on two final lines was lifted to 55 cars an hour, from the previous 45. Then, early this month, the rate was raised again, to 60 an hour, and a boost to 65 is planned in June. Plant employment rose from 7767 last December to 9666 on April 30.

Sheet steel for bodies was the first big hurdle to be cleared. Funds were advanced to a new independent producer and steel is now piling into Briggs plants, where Packard bodies are built, at an encouraging rate. The second constriction was in the foundry where inventories of cast iron scrap for cupolas had about vanished. Then last December, the company came up with its famous "bonus car" plan for dealers in 11 sales zones who could corral suitable scrap iron from their areas and route it to Detroit, one car being allocated above quota for each ton of scrap so collected. Forgetting for the moment that the plan just about busted the national market for cupola cast scrap, the end result has been that in five months enough cast scrap has been shipped to the Packard foundry to insure a year's operations at today's high rate.

Dealers received the Detroit market price for the scrap, with the company assuming freight charges. At first, the material was quoted at around $45 per ton, but when Packard dealers began scrambling for tonnage, some reportedly paying as high as $100 per ton, the market jumped to $65 per ton and even now has simmered down only a little from that fantastic figure. Shipments of scrap to the plant in Detroit will be completed about July 31. Shipments of "bonus" cars to co-operating dealers started last month.

Studebaker Unveils New Trucks

With all assembly operations moved to a recently-acquired war plant in South Bend, once a production center for radial aircraft engines, Studebaker has taken the wraps off a complete new line of trucks called the '49ers (taking that appellation from plans which other manufacturers may have had to tag new models). Available in 12 different wheelbases, the trucks also cover a wide range of models and capacities, including a new 2-ton design and a 3/4-ton type. In the new line, engineers have concentrated on improving mechanical accessibility and driver comfort. All electrical wiring and instrument gages, for example, can be reached easily from beneath the hood. Cab comfort is enhanced by ventilation through air scoops, metal tunnels and sliding panels in the firewall.

Softer ride is attained through the use of longer and more flexible springs.

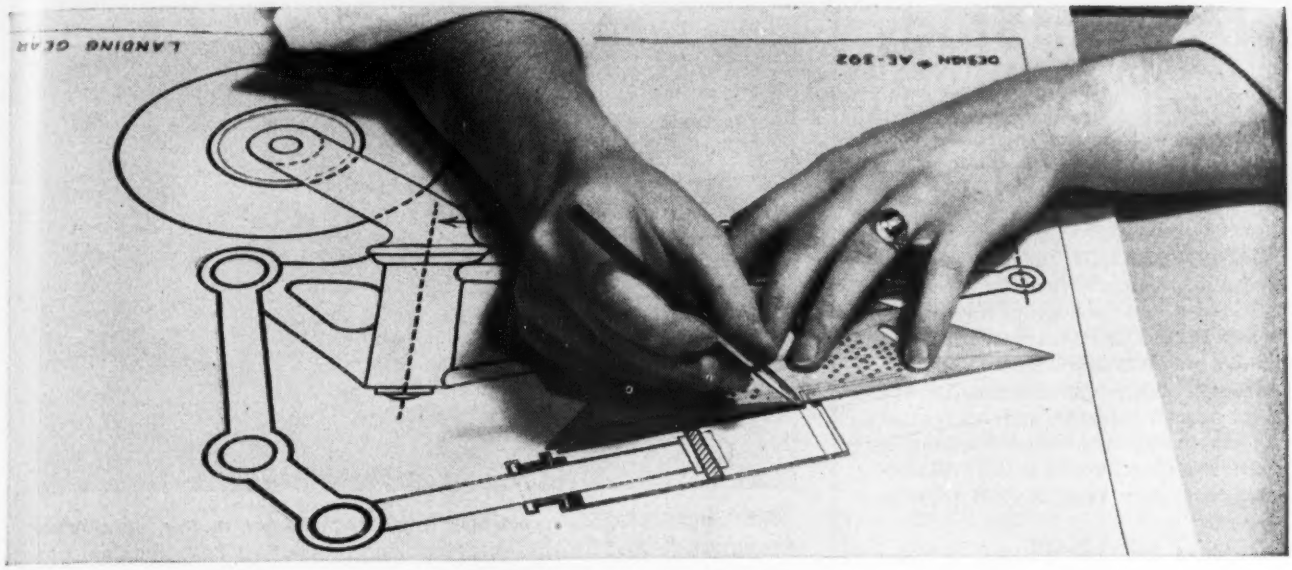
New Cars Planned

A total of 23 new companies have announced plans for entering the passenger car field in recent years, according to an A.M.A. check. Three plan "flying cars"; one plans motorized rickshaws to sell in China; most of the rest aim at making small cars to sell below $1000. Seven in the latter group have three-wheel units in mind. Two designers of racing cars are in the field, one with a rear-engine design, the other planning a custom unit priced at $25,000. None of the foregoing is near the production stage, excepting possibly Tucker.

In 1921 there were 89 makes of passenger cars on the market, today there are 20, two of them new in 1946. Only one of today's 20—Crosley—has been able to stay in the field below $1000.

Cadillac Change Unlikely

Rumors of an impending design change by Cadillac to eliminate the "dorsal fins" in rear fenders are termed "preposterous" in Detroit automotive circles. Cadillac has orders on books for almost two years' production and there appears no strong demand for design changes.



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NAPA To Study Steel, Other Buy-Buy Blues

METALWORKING industry's number one problem—where and how to get steel—will come up for review when Hiland G. Batcheller, president of Allegheny Ludlum Steel Corp., discusses the supply situation before the 33rd annual international convention and show of the National Association of Purchasing Agents at the Waldorf-Astoria in New York, May 31 through June 2.

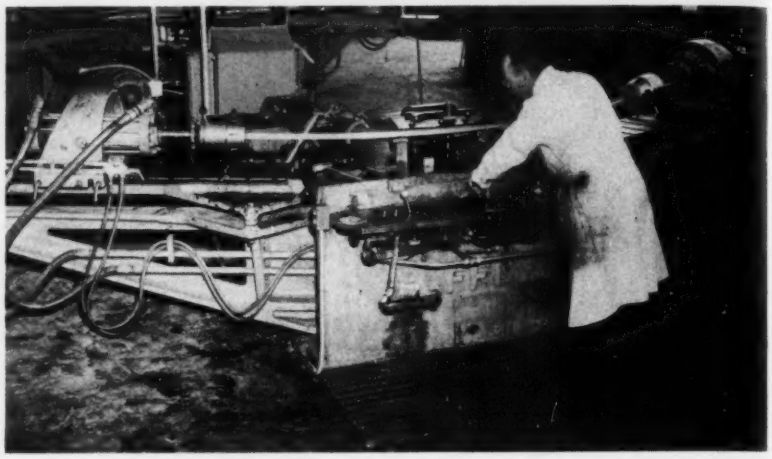
General business outlook will be analyzed, with particular emphasis on price trends. Speakers on this general subject are to be Harold Boeschenstein, president, Owens-Corning Fiberglas Corp.; Robert C. Swanton, chairman of NAPA's business survey committee; and Martin R. Gainsbrugh, chief economist of the National Industrial Conference Board.

Discusses Construction Trends—Industrial construction trends will be examined by Thomas S. Holden, president of F. W. Dodge Corp. Leo Wolman, professor of economics at Columbia University, has as his topic labor costs and policies. John H. Danaher, formerly U. S. senator from Connecticut and now a metals industry consultant in Washington, will present the outlook for nonferrous metals.

International affairs and their effects on business will be the subject of one general convention session. These effects will be analyzed by George W. Wolf, president of United States Steel Export Co.; A. W. Zelomek, president of the International Statistical Bureau; and George Stuart Brady, industrial materials consultant in Washington.

Training for purchasing, the education and apprenticeship necessary for qualified performance will be featured at another session. How purchasing can contribute to cost reduction will be reviewed by Victor G. Lottmann, director of purchasing research of Ford Motor Co.

Other Speakers—Other speakers include Garnet T. Dickson, president of NAPA who will present his annual report, and Dr. John L. Davis of Chicago who will address the convention at its annual banquet.



STRETCHING PRESS: . Fuselage frame sections for a new jet bomber are stretch-formed on a Hufford stretching press at Vic Pastushin Industries Inc., Inglewood, Calif. Combining low tooling costs with extreme versatility, the stretching press method produces parts of a complex shape in a single operation, without need for secondary operations. Forming is accomplished by placing the metal under tension and wrapping it around a stationary form block or die. Wrinkling at points of curvature is eliminated, close dimensional tolerances maintained, tensile strength and yield point are raised

Brown Instrument Plans $2,500,000 Expansion

Brown Instrument Co., Philadelphia, manufacturer of automatic control apparatus for industrial use, plans a $2,500,000 expansion program which will add more than 60 per cent to its present production space. Brown Instrument is a subsidiary of Minneapolis-Honeywell Regulator Co.

The program includes construction of a four-story addition to the main plant at Wayne Junction, Philadelphia. Work is expected to begin this month, and the first phase of the project is scheduled for completion next March.

Maytag $5 Million Plant Slated for Newton, Iowa

Maytag Co. will build a $5 million automatic washer plant in its home city of Newton, Iowa. This announcement by Fred Maytag, president, ended two months of speculation as to where the factory would be located. The firm has secured a 54-acre tract in northeast Newton, and the plant will have 250,000 sq ft of area, all on one floor. Two railroad sidings and two sets of truck docks will provide platform-level loading. Facility will be completed on about Dec. 1, and production is scheduled to begin early in 1949.

U. S. Steel To Release New Motion Picture

United States Steel Corp.'s new motion picture, "Unfinished Business," will soon be released to theaters throughout the country.

The film, which had its premiere at the corporation's recent annual meeting of stockholders, describes from V-J Day the progress of U. S. Steel's multi-million dollar construction and modernization program.

Actual mill operations, scenes of new plants being built and sequences showing mining, research and employee activities were taken at plants in Gary, Ind., Pittsburgh, Clairton, Pa., Lorain, O., South Chicago, Waukegan and Joliet, Ill., Birmingham, St. Louis, Geneva, Utah, Pittsburg, Calif., and Duluth and Coleraine, Minn. Actors in the film are for the most part steel workers.

Johnson Steel & Wire Opens Enlarged Lab

Johnson Steel & Wire Co. recently opened an enlarged laboratory at its Worcester, Mass., plant, with George E. Seeley, B. S. and M. E., University of Maryland, in charge. Two important functions in the wire industry are the primary objectives of this laboratory. One is the scientific study of any user's problems on wire, and the other is quality control within the Johnson plants.

The laboratory is equipped to break down steel, to make chemical and physical analyses, microphotographs etc. Work will include developing new products as well as improving present manufacturing processes.

Briefs . . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Bureau of Mines last week dedicated its new $3,500,000 synthetic liquid fuels laboratories and pilot plants at Bruceton, Pa.

—o—

Spencer Chemical Co., Kansas City, Mo., has purchased Jayhawk Ordnance Works, Galena, Kans., from War Assets Administration for $11 million.

—o—

Victor Industries Corp., Brooklyn, N. Y., producer of collapsible tubes, has formed Victor Industries Corp. of California, Chico, Calif., to manufacture collapsible tubes made from aluminum slugs. Tubes are used for toothpaste, shaving cream, etc.

—o—

Roberts & Schaefer Co., manufacturer of cinder and sand handling equipment, coal cleaning apparatus and other products, has moved its principal offices to 130 N. Wells St., Chicago.

—o—

Bureau of Mines has published an investigation report which describes how high-grade sponge iron—a usable substitute for scrap iron in steel manufacture—can be produced in large tunnel kilns similar to those used in modern ceramic plants for making refractory ware.

—o—

Michigan Steel Casting Co., Detroit, manufacturer of castings, rolled products and other items, has appointed Robert Duenner & Co., Tulsa, Okla., as its sales representative in Oklahoma, Kansas and Colorado.

—o—

War Assets Administration has sold the Wright Aeronautical Corp. plant at East Paterson, N. J., to Allen B. DuMont Laboratories Inc. for $1,700,000. DuMont manufactures television equipment.

—o—

Optimus Equipment Co., Matawan, N. J., manufacturer of degreasers, washing and drying equipment, announces the joining of that company and Midwestern Mfg. Co., New York, manufacturer of degreasers. The Midwestern line will be retained and the company will continue under the name, Optimus Equipment Co., with headquarters and manufacturing at Matawan.

—o—

Diamond Machine Tool Co., Los Angeles, manufacturer of punch presses and milling machines, has purchased the complete line of power shears and punch presses previously produced by Parker Mfg. Co., Santa Monica, Calif., and will manufacture these products in the future.

—o—

Rockwell Mfg. Co., Pittsburgh, manufacturer of many products including machine tools, meters, valves, control devices and computing mechanisms, has purchased Red Star Products Inc., Norwalk, O., manufacturer of radial arm saws. Corporate identity of the acquisition will be continued, and the company will operate as a Rockwell subsidiary. Its products will be sold through dealers of Rockwell's Delta Mfg. Division, manufacturer of wood working machine tools.

—o—

Young Radiator Co., Racine, Wis., manufacturer of radiators, cooling systems and heating units, has purchased the plant formerly occupied by Atlas Imperial Diesel Engine Co. at Mattoon, Ill. Young's main office and plant will be retained at Racine. Mattoon facility will be used for the production of large heat transfer units.

—o—

Raytheon Mfg. Co., Waltham, Mass., manufacturer of radio and electric equipment, reports that the New York offices of its various departments, divisions and subsidiaries are located as follows: Equipment Sales Division, International Division, Russell Electric Co., Submarine Signal Co., 50 Broadway; publicity department and broadcast equipment sales department, 60 E. 42nd St.; Belmont Radio Corp., 521 Fifth Ave.

—o—

Ampco Metal Inc., Milwaukee, has appointed Bay State Bronze & Aluminum Co., East Longmeadow, Mass., as an Ampco licensee, authorized to produce castings from Ampco Metal ingot.

—o—

Waltham Grinding Wheel Co., Waltham, Mass., manufacturer of grinding wheels and other abrasive equipment, has moved its Detroit factory branch to 1433 E. Eight Mile Rd., Hazel Park, Mich. Walter W. Hayden has been recently appointed to manage the branch.

—o—

Hotpoint Inc., Chicago, has opened a new factory at Milwaukee for limited production of electric water heaters, with schedules calling for acceleration until peak output is reached by the end of 1948.

—o—

Alabama State Docks & Terminals, Mobile, Ala., a state agency, has opened offices at 327 S. La Salle St., Chicago, and 50 Broad St., New York, to serve foreign shippers.

—o—

Production Aids Inc., Van Nuys, Calif., has appointed Lamson Corp., Syracuse, N. Y., as exclusive sales and service representative for the firm's Automatic Pallet Loader.

—o—

Link-Belt Co., Chicago, manufacturer of materials handling equipment, has opened a district sales office in Albany, N. Y., with headquarters at 309-310 First Trust Company Bldg. J. Charles Bullock will be in charge. The Schenectady, N. Y., office is discontinued.

—o—

Luria Bros. & Co. Inc., Philadelphia, will move its Ohio district scrap brokerage office at Cleveland from the Terminal Tower to larger quarters on the tenth floor of the Midland Bldg., about June 1. The office, which six years ago had two employees, now has 19.

—o—

North American Philips Co. Inc. has moved its national and export sales offices for x-ray equipment to its new factory and office building at 750 S. Fulton Ave., Mt. Vernon, N. Y.

—o—

Parker Appliance Co., Cleveland, has appointed Cleveland Ball Bearing Co., Cleveland, as distributor for o-rings in the Cleveland area.

—o—

Babcock & Wilcox Tube Co., manufacturer of welded and seamless tubes and subsidiary of Babcock & Wilcox Co., New York, has moved its New York district sales office from 85 Liberty St. to 22 E. 40th St. Harvey Wilson is district sales manager.

—o—

Sapphire Products Division, Aurora, Ill., Elgin National Watch Co., has reduced prices seven to 25 per cent on all its sapphire plug gages.

—o—

Hoover Ball & Bearing Co., Ann Arbor, Mich., manufacturer of steel balls and ball and roller bearings, has appointed Borg-Warner International Corp., Chicago, to handle its export activities for automotive products.

—o—

Raypo Corp., manufacturer of drill presses, has consolidated its main office and factory in a new building at 5751 W. 98th St., Los Angeles.

The Business Trend

ADDITIONAL RECOVERY of steel production from effects of the coal mining disruption provided moderate buoyancy to the nation's industrial production rate in the week ended May 15. This is reflected in a rise in STEEL's industrial production index to 160 per cent (preliminary) of the 1936-1939 weekly average from 158 in the preceding week.

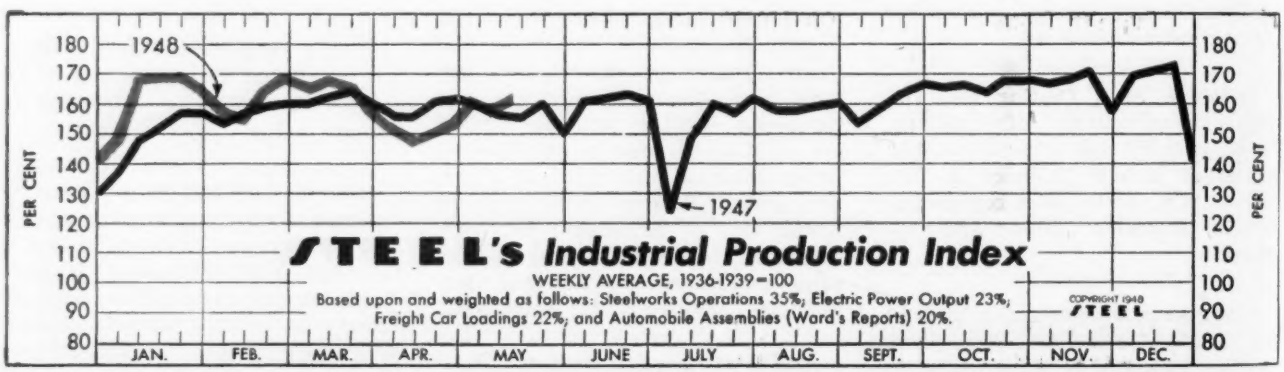
Production in many instances is limited only by the available steel supply, and with demand for many consumers goods, particularly automobiles, showing no signs of diminishing there is little near-term probability that even a sustained high level of steel output can put supply in balance with requirements. Even increased strength in demand for consumers goods can be expected from additional buying power resulting from the recent reduction in federal income taxes. An indication of the vast amount of money becoming available to consumers is a Commerce Department report that personal income increased in March to an annual rate of $208.5 billion from $207.7 billion in the previous month. Although the March level was below the alltime high of $211 billion rate in January it was considerably above the average annual rate of $197 billion for 1947.

STOCKS—Further indication of confidence in the future is the recent upsurge in buying on the stock market, with resultant advances in price averages. One factor probably influencing this market upswing is improved earnings and dividend payments by industry. Publicly reported cash dividend payments, accounting for about 65 per cent of all gross cash dividends paid, amounted in April to $456 million, 14 per cent above the $398,800,000 paid in April, 1947.

PLANT, EQUIPMENT—Also indicating confidence in the future is a Commerce Department report that American business, exclusive of agriculture, plans to spend $18.7 billion on new plant and equipment in 1948, or over 15 per cent more than the $16.2 billion outlay last year. Allowing for price increases, the anticipated total business outlays for new plant and equipment in 1948 would provide for about the same physical volume as in the last half of 1947.

AUTOS—Holding back the current industrial production rate to some extent is automobile output, which in the week ended May 15 was estimated at 82,155 passenger cars and trucks, lowest outturn since the week ended Jan. 3. This lowered rate was attributed to only partial resumption by companies recently closed for inventory accumulation and model changes and to the closing of one major producer by a strike.

COAL—From a 13,800,000-ton production which in the week ended May 1 equaled the current year's high mark, bituminous coal output in the week ended May 8 declined to an estimated 12,680,000 net tons. Effects of the recent mining disruption and a generally lower productive record this year are reflected in an aggregate output through May 8 of only 188,613,000 tons, compared with 226,024,000 tons in the corresponding period of last year.



Index (chart above): Week ended May 15 (preliminary) 160 Previous Week 158 Month Ago 150 Year Ago 155

BAROMETERS of BUSINESS

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)†	94.5	92.0	73.0	94.5
Electric Power Distributed (million kilowatt hours)	5,109	5,087	5,087	4,616
Bituminous Coal Production (daily av.—1000 tons)	2,113	2,300	388	2,177
Petroleum Production (daily av.—1000 bbl.)	5,423	5,413	5,391	5,088
Construction Volume (ENR—Unit $1,000,000)	$149.2	$113.3	$144.6	$131.3
Automobile and Truck Output (Ward's—number units)	82,155	84,684	104,761	82,881

* Dates on request. † 1948 weekly capacity is 1,802,476 net tons. 1947 weekly capacity was 1,749,928 net tons.

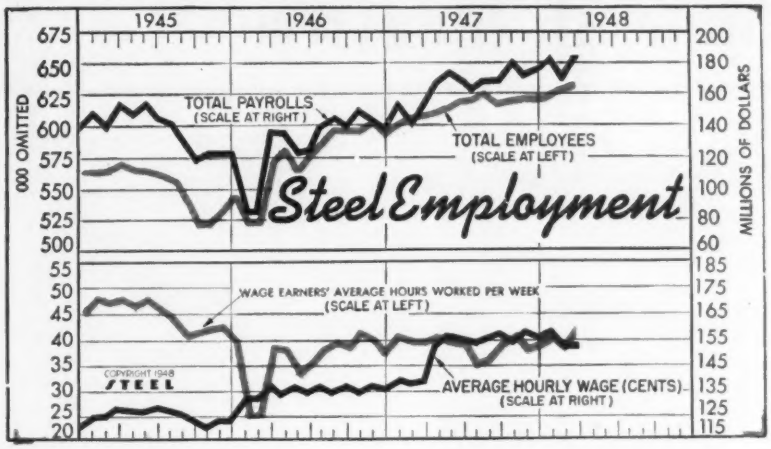
TRADE				
Freight Carloadings (unit—1000 cars)	878†	881	786	888
Business Failures (Dun & Bradstreet, number)	100	108	101	88
Money in Circulation (in millions of dollars)‡	$27,762	$27,762	$27,774	$28,134
Department Store Sales (change from like wk. a yr. ago.)‡	+6%	+7%	+13%	+13%

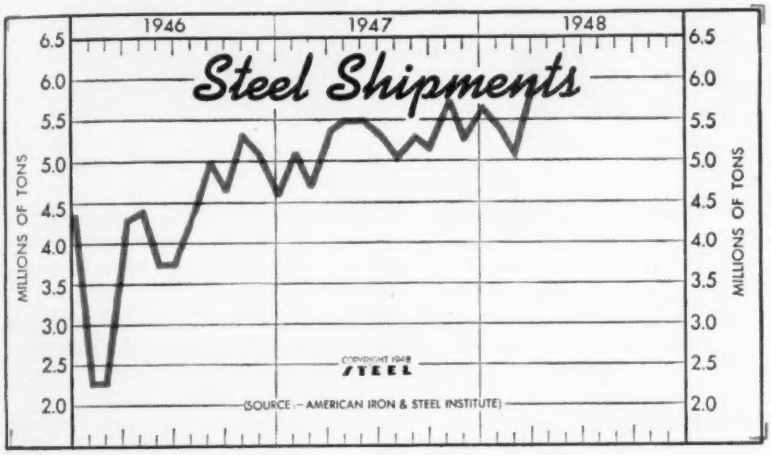
† Preliminary. ‡ Federal Reserve Board.

Steel Employment

	Employees† (000)		Total Payrolls (millions)		Hourly Wages† (cents)	
	1948	1947	1948	1947	1948	1947
Jan.	622	601	$180.2	$155.8	157.3	138.1
Feb.	626	607	167.6	139.5	155.1	137.0
Mar.	629	609	183.0	150.6	154.8	137.9
April	611	....	168.3	....	153.3	
May	615	....	175.8	....	155.6	
June	623	....	167.6	....	154.7	
July	623	....	163.2	....	153.9	
Aug.	625	....	169.1	....	155.6	
Sept.	618	....	168.9	....	157.1	
Oct.	620	....	180.1	....	154.6	
Nov.	624	....	171.0	....	158.7	
Dec.	621	....	175.3	....	156.5	

† Monthly average.





Steel Shipments

(Net Tons)

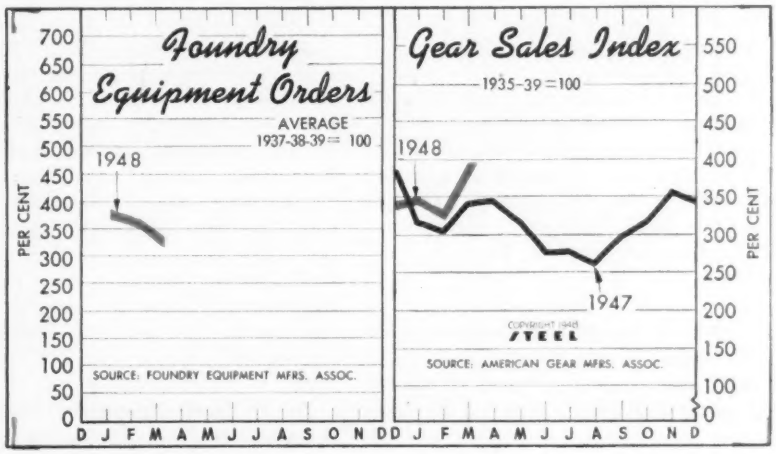
	1948	1947	1946
Jan.	5,410,438	5,061,333	2,189,369*
Feb.	5,046,115	4,626,424	2,189,368*
Mar.	5,978,551	5,304,415	4,213,913
Apr.	.....	5,445,993	4,335,694
May	.....	5,442,343	3,666,677
June	.....	5,263,711	3,687,509
July	.....	4,974,566	4,259,494
Aug.	.....	5,278,223	4,965,456
Sept.	.....	5,118,839	4,589,902
Oct.	.....	5,681,597	5,260,832
Nov.	.....	5,216,990	5,019,984
Dec.	.....	5,613,036	4,533,420

* Figures for January and February, 1946, are merely averages derived from a report that combined shipments for those two strike-affected months into a total of 4,378,737.

Foundry Equipment Orders* and Gear Sales

	Foundry Equipment Orders* (Index (1937-38-39=100))	Gear Sales (Index (1935-39=100))	
	1948	1948	1947
January	380.9	346.8	317.0
February	367.3	324.4	303.0
March	326.2	389.8	342.9
April	....	....	346.2
May	....	....	317.2
June	....	....	278.0
July	....	....	278.5
August	....	....	261.6
September	....	....	297.7
October	....	....	317.7
November	....	....	356.9
December	....	....	343.6

* By foundry trades only.


Foundry Equipment Orders
AVERAGE 1937-38-39 = 100
1948
PER CENT
SOURCE: FOUNDRY EQUIPMENT MFRS. ASSOC.
Gear Sales Index
1935-39 = 100
1948
1947
COPYRIGHT 1948 STEEL
SOURCE: AMERICAN GEAR MFRS. ASSOC.
PER CENT
D J F M A M J J A S O N D D J F M A M J J A S O N D

FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$12,900	$13,508	$12,663	$12,245
Federal Gross Debt (billions)	$252.2	$252.1	$252.3	$257.7
Bond Volume, NYSE (millions)	$28.5	$22.2	$23.4	$21.7
Stocks Sales, NYSE (thousands)	13,174	7,463	7,378	6,138
Loans and Investments (billions)†	$63.1	$62.9	$62.9	$63.2
United States Gov't. Obligations Held (millions)†	$35,640	$35,475	$35,214	$39,732

† Member banks, Federal Reserve System.

PRICES

STEEL's composite finished steel price average	$80.27	$80.27	$81.14	$69.82
All Commodities†	161.9	162.6	160.6	146.7
Industrial Raw Materials†	175.1	176.8	174.1	160.1
Manufactured Products†	157.6	157.9	156.0	141.9

† Bureau of Labor Statistics Index, 1926=100.

Men of Industry

S. K. HARRINGTON

FRED A. KAISER

BURKE B. ROCHE

S. K. Harrington and **Fred A. Kaiser** have been elected to the offices of vice president, and **Charles E. Lewis** to the office of secretary, Detroit-Michigan Stove Co., Detroit. Mr. Harrington has been associated with the A-B Stove Inc. Division of Battle Creek in various capacities, culminating as purchasing agent of A-B Stove Inc. Division. After the merger of A-B Stove Inc. Division with the Detroit-Michigan Stove Co., Mr. Harrington devoted his time to the procurement of materials and the sale of A-B products. Mr. Kaiser was made general sales manager of Detroit-Michigan Stove Co. in 1938 and in 1943 was promoted to assistant to the president. **Charles E. Lewis** has been elected secretary, and **Gordon A. Dennis,** assistant secretary of the company.

—o—

Charles R. Ince has been appointed sales manager, St. Joseph Lead Co., New York, succeeding **Irwin H. Cornell,** retired after 38 years of service in the company.

—o—

Henry W. Rahn has been appointed research and development director for Southern Alkali Corp.'s Corpus Christi, Tex., plant. He has been associated with the corporation since 1934, and has been acting director of research and development at the plant during the past two years.

—o—

Ernest Baxter, vice president, Sheffield Steel Corp., Kansas City, Mo., will retire June 1 after more than 30 years of continuous service, but will continue in a consulting capacity. He served during the years successively as general manager sales, assistant to president and vice president. **George P. Lacey** has been appointed manager, railroad sales, with headquarters at Kansas City. He has been associated with the company for 12 years in various capacities, and has recently held the position of district manager, San Antonio office.

—o—

Edward R. Hall has been promoted to the position of vice president and assistant general manager, Shops Division, Koppers Co. Inc., at Baltimore. Since 1946 Mr. Hall has been vice president and works manager of the division. **Arthur C. Thompson** has been appointed works manager. **John H. Redmond,** former vice president and general manager, Precisioneering Inc., Pittsburgh, has been appointed assistant production manager of Koppers Co. Inc., to succeed **Lenvik Ylvisaker,** who recently was named assistant general manager of the Piston Ring Division in Baltimore.

—o—

R. J. Davis, formerly president, Johnston & Jennings Co., Cleveland, has been elected chairman of the board. He is succeeded in the presidency by **W. C. Potthoff,** formerly executive vice president. **C. J. Van Landeghem** has been elected vice president in charge of the Oceco Division, and **Stewart Mills,** secretary and treasurer.

—o—

William L. Dean has been elected president and general manager, Mathews Conveyor Co., Ellwood City, Pa. He recently was also made president of the Canadian and Pacific Coast subsidiaries of the company, Mathews Conveyor Co. Ltd., and Mathews Conveyor Co. West Coast. He has been associated with the Mathews organization since 1909, and has served the company as vice president and general manager since 1943. The retiring president, **F. E. Moore,** has been elected chairman of the board of directors of the company and its subsidiaries.

—o—

Burke B. Roche has been elected vice president, Binks Mfg. Co., Chicago, manufacturer of paint spraying equipment, cooling towers and industrial spray nozzles. Prior to his election as vice president, Mr. Roche was in charge of the Industrial Division of the company.

—o—

Forrest E. Richmond has been elected vice president, Revere Copper & Brass Inc., New York, and executive head of that company's Rome Division. He has been associated with Revere since 1908, and was formerly works manager of the Rome Division.

—o—

Eugene W. Fuller has been elected vice president, Shakeproof Inc., Chicago, a division of Illinois Tool Works. He will direct manufacturing and sales activities of the division.

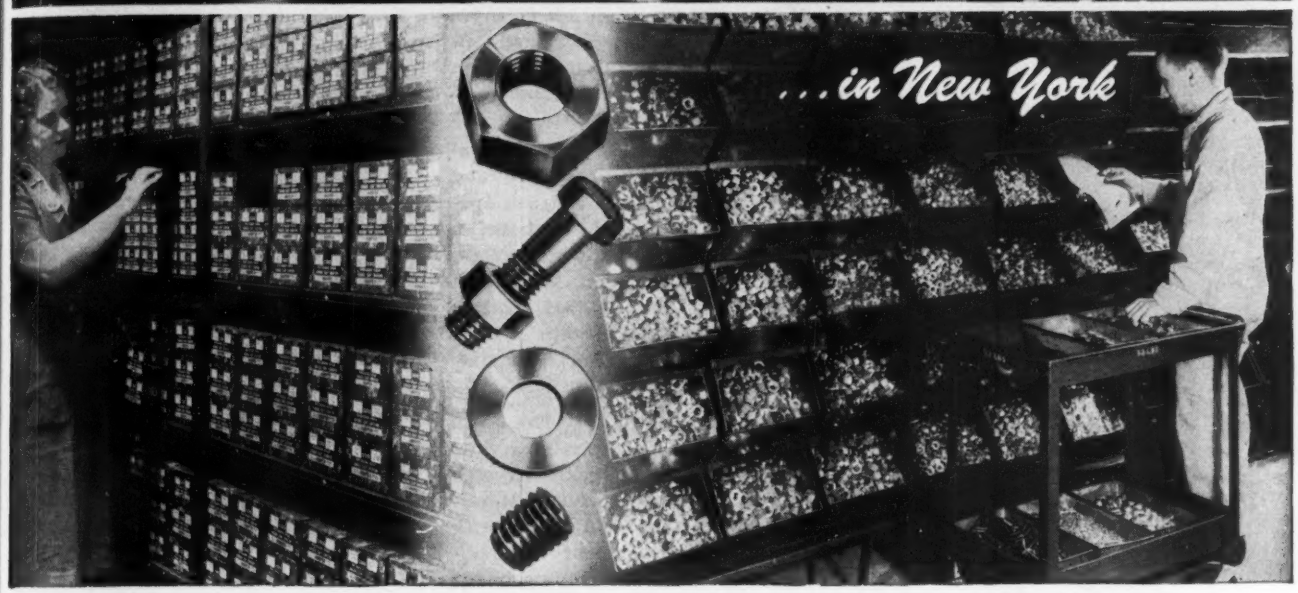
—o—

Dean A. Harrington, former sales representative for Frontier Bronze Corp., Niagara Falls, N. Y., has been appointed sales manager, Foundry Division, Parker Pattern & Foundry Co., Springfield, O.

—o—

Edwin A. Myers has been transferred to the mechanical development and engineering department, Dow Chemical Co., Midland, Mich., where he assumes the duties of a research and development engineer. Formerly connected with the Cellulose Division as an engineer, he has been with the

For "Special" *and* "Hard-to-get" Fastenings
Come to HARPER STOCKS



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Over **5000** different types and sizes of non-ferrous and stainless steel fastenings are carried in Harper stocks at New York and Chicago **for immediate shipment.** Many are often considered "special" or "hard-to-get"—but Harper has them; and they are in stock for you because of a conistent, 25-year policy of constantly adding odd and unusual items to stock.

All Harper fastenings are corrosion resistant; many are non-magnetic, non-sparking; can be used again and again, give longer service, speed dis-assembly, stand up under adverse conditions where other fastenings "freeze" or fail.

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company since 1936. **Emmit W. Archer** has been added to the company staff as research and development engineer in the magnesium laboratory. He previously had been with the Udylite Corp., Detroit.

—o—

H. Arthur Howe has been appointed manufacturing manager, Compound Division, General Electric Co., at Pittsfield, Mass. He has been with the company since 1933, and since 1947 has been superintendent of the Compound Division.

—o—

Gordon P. Bier has been appointed assistant to the director of purchases and stores, Illinois Central Railroad.

—o—

Felix Wunsch of the engineering staff, Leeds & Northrup Co., Philadelphia, and inventor of numerous circuits widely used in electrical measuring instruments, has retired from the company, with which he has been associated since 1905. **Paul V. Roth,** since 1919 shop engineer, has also retired after nearly 46 years of service with Leeds & Northrup.

—o—

Laura A. Orbach, former president, Clark-Wells Metal Co., St. Louis, has joined the St. Louis office and warehouse staff of C. G. Hussey & Co., Pittsburgh producers of copper and brass products. Miss Orbach served as a distributor for Hussey copper and brass products before taking this position with the company. She will continue to maintain headquarters in St. Louis.

—o—

Lawrence A. Franks has been appointed manager of the Boston district office of H. K. Porter Co. Inc., Pittsburgh. He has been associated with Bird & Sons Inc. as a sales engineer, and spent some time with Metal Glass Products Co.

—o—

Louis E. Feisner has been appointed superintendent, mechanical maintenance, universal, hot and cold strip mill department, Midland Works, Crucible Steel Co. of America, Pittsburgh. He previously had been with Braeburn Alloy Steel Corp., Braeburn, Pa. **Edgar M. D. Herold** has been appointed assistant superintendent, finishing mills, at the Midland Works. He had been with the Duquesne Works, Carnegie-Illinois Steel Corp., U. S. Steel Corp. subsidiary.

—o—

Franklin F. Bogardus, district sales manager, Roots-Connersville Blower Corp., Connersville, Ind., has opened an office in Cleveland at 2306 East 22nd St., Plymouth Bldg., and will cover about the same territory previously handled from the factory. Roots-Connersville is affiliated with Dresser Industries Inc., which maintains its headquarters in Cleveland.

—o—

American Ordnance Association has appointed **Edward A. Ash,** F. L. Jacobs Co., Detroit, as chairman of the Rocket, Jato (Jet Assist Take-off), Guided Missile Committee for the Army and Navy. Mr. Ash, former director, Appliance Division, Jacobs Co., had been assigned new duties. He will lend his assistance, whereever possible, to projects designed for national defense.

—o—

Robert P. Koenig has been named acting director, Industry Division, Economic Co-operation Administration. Mr. Koenig is head of Ayrshire Collieries Corp., Fairview Collieries Corp. and Delta Collieries Corp. of Indianapolis.

—o—

McConway & Torley Corp., Pittsburgh, manufacturer of carbon and alloy steel castings and railroad specialties, has appointed **Graham J. Logan** as assistant superintendent. Prior to joining the firm, Mr. Logan was with the Verona Steel Casting Co., and was associated with pattern shop operations at the Fort Pitt Malleable Co., McKees Rocks, Pa.

—o—

John R. Quinn has been appointed assistant product manager, Extrusion & Tubing Division, Reynolds Metals Co., Louisville, and will work with customers in development of applications for extruded aluminum in the architectural field. Mr. Quinn had formerly spent 16 years with the W. S. Tyler Co., Cleveland.

—o—

John J. Lincoln Jr., director of sales services, Air Reduction Sales Co., New York, has been elected president, International Acetylene Association. **A. J. Fausek,** president, Modern Engineering Co., St. Louis, has been elected vice president and **E. V. David,** assistant manager, Technical Sales Division, Air Reduction Sales Co., elected treasurer.

—o—

John H. Hauser has been appointed assistant manager, distributor sales department, Radio Division, Sylvania Electric Products Inc., New York.

—o—

New York Belting & Packing Co., Passaic, N. J., announces appointment of **Ray Caldwell** as representative for the company's northeast district, embracing New England, metropolitan New York, northern New Jersey and eastern Pennsylvania. Mr. Caldwell's headquarters will be in New York.

—o—

John M. Davidson has been named Pittsburgh district sales representative, Special Chemicals Division, Pennsylvania Salt Mfg. Co., Philadelphia. He formerly had been sales representative in the northern New Jersey and New York city territory. In his new position he succeeds **William J. Hennessy,** now Pittsburgh district sales manager of the division. **William D. Wilson** succeeds Mr. Davidson in his former territory.

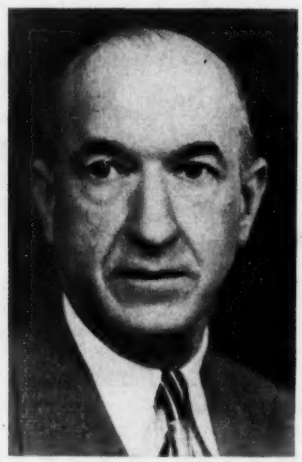
—o—

Farrel-Birmingham Co. Inc., Ansonia, Conn., and Buffalo, has appointed **Paul R. Oliver** as West Coast manager, with headquarters at the Los Angeles office. He has been service engineer for the company since 1942, and had previously been employed by the American Can Co. and the Ankerite Paint Co. in electrical engineering capacities.

—o—

Michigan Steel Casting Co., Detroit, announces appointment of **Fred H. Currie** and **S. G. Higginbotham** as sales representatives in California

JOHN R. QUINN



PAUL R. OLIVER

First there were 2 Bliss Cluster Mills NOW THERE ARE 10

Small Bliss Cluster Mills, reversing and one-way, have proved their year-in, year-out efficiency in cold reducing narrow high-carbon and stainless steel. That's why one company has added a new battery of eight Bliss mills to the two originally installed.

Here are some of the operating features that make these rolling mills so practical:

Mills are easy to install, being mounted on one-piece base. Rolls are easy to change. Maintenance is low.

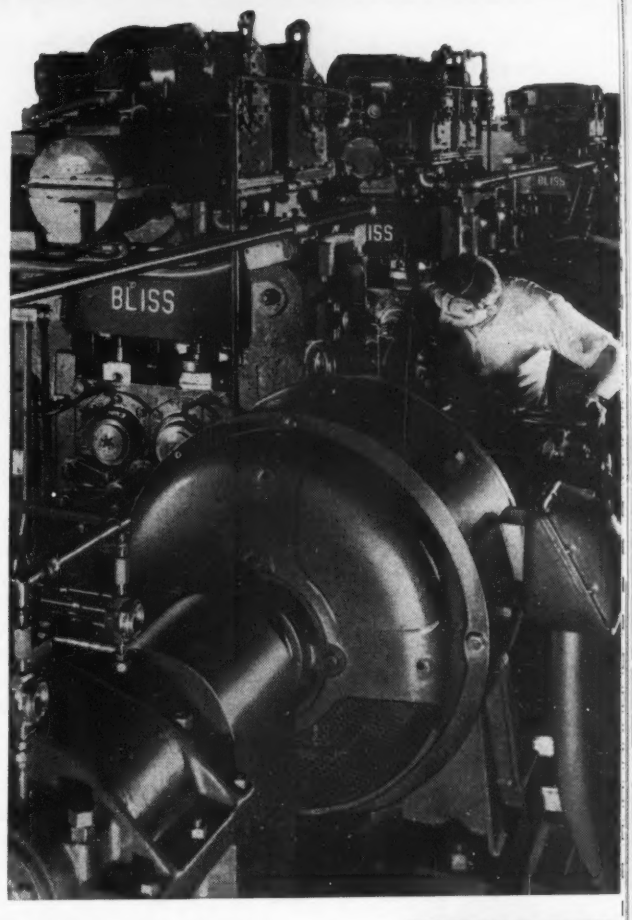
Motor control of screw-down gives better control of gage. Stalled tension is maintained when necessary.

Lubrication is automatic...mill stops if oil or grease pressure fails.

Moving parts are completely enclosed wherever possible for safety.

These sum up to the kind of skill that's built into all Bliss equipment...the related know-how that comes of merging ninety years of experience into rolling mill engineering and construction.

It may be just what you need to solve your rolling mill problem. Talk it over with a Bliss Sales Engineer.



Bliss Cluster Mills shown have 3¼" dia. work rolls, 9" diameter backing rolls and 8" face width. Electrically controlled tension reel is adjustable from 1100# to 150#.

Cold reducing high carbon alloy and stainless steels from gages of .125" to .004". Delivery speed ranges 100 to 400 fpm with suitable variable speed motor.

Quick loading and reloading of coils keep Bliss mills producing with little interruption. Operator is readying new reel as stock in mill nears end of finish-rolling.

E. W. BLISS COMPANY, DETROIT 2, MICHIGAN

Manufacturers of two-, three-, and four-high mills for hot and cold rolling; single stand, reversing, or tandem mills for ferrous or nonferrous metals. Accessory mill equipment furnished complete.

and Arizona. They will make their headquarters in Los Angeles, and will handle all of the company's products, including heat resisting alloys and stainless steel castings, rolled products and precision castings.

—o—

Lawrence A. Appley, vice president, Montgomery Ward & Co., has been appointed president, American Management Association, succeeding **Alvin E. Dodd,** who has been president for the past 12 years, and who has been elevated to the newly created post of honorary president.

—o—

John F. Deems has been elected a director and a vice president, Magnus Brass Mfg. Co., Cincinnati, sales agent of National Lead Co., New York. He has also been appointed manager of Magnus Brass Division, National Lead Co.

—o—

Claude B. Schneible Co., Detroit, announces **George C. Schreiber** of its sales engineering department has been placed in charge of the northern Illinois and Wisconsin territories, with headquarters at Chicago.

—o—

William C. Roederer has been appointed district manager of the St. Charles, Mo., passenger car plant, of which he had previously been assistant district manager, American Car & Foundry Co., New York.

—o—

Dwain E. Fritz has joined the development engineering staff, Jack & Heintz Precision Industries Inc., Cleveland, as manager, special aviation projects section. For the past two years he has been manager, aircraft motor and generator section, aviation engineering department, Westinghouse Electric Corp.'s Lima, O., plant.

—o—

Reese B. Lloyd has been appointed manager of plants, Rheem Mfg. Co., San Francisco, and will make his headquarters at South Gate, Calif., plant.

—o—

Clyde H. Slease has been appointed labor counsel, Dravo Corp., Pittsburgh.

—o—

A number of new appointments to the General Detroit Corp. sales department have been announced as follows: **Preston W. Wolf** has been elected executive assistant to the vice president. For the past two years he has been sales promotion manager, and he will retain sales promotion and advertising responsibilities in his new position. **H. J. O'Neill** has been appointed field sales manager. Also announced is the appointment of two new men as national account representatives: **Eric Park** is now eastern region representative with headquarters in New York, and **Clifford Hain** is midwest representative with headquarters in Chicago.

—o—

National Gypsum Co., Buffalo, announces appointment of **James J. Ryan** to the newly created position of manager of gypsum, lime, and steel products sales.

—o—

Marley Co. Inc., Kansas City, Kans., announces change of its Los Angeles office address to 810 South Spring Street. **Harold A. Dresser** recently joined the Los Angeles sales department.

—o—

S. Hoyt Price has been named manager of the Omaha, Nebr., and **Bert Christopher,** of the Oklahoma City, Okla., district of the Replacement Tire Sales Division, B. F. Goodrich Co.

—o—

Enders M. Voorhees, chairman, finance committee, U. S. Steel Corp., New York, has accepted the chairmanship of the Manhattan Committee for the 1948 Greater New York Fund Campaign.

—o—

Roy A. Garrison, vice president and works manager, Adirondack Foundries & Steel Inc., Watervliet, N. Y., has been elected a director of the company.

—o—

Glenn C. Merkley has been appointed manager, Industrial Products Division, National Supply Co., at the Torrance, Calif., plant of the company.

—o—

Eugene D. Bishop has joined the Mining Division, Firth Sterling Steel & Carbide Corp., McKeesport, Pa., as special representative in the development and sale of rock bits which are tipped with Firthite sintered carbide. He will make his headquarters in Boulder, Colo. Mr. Bishop formerly had been general superintendent, Worlock Stone Co., Canastota, N. Y.

—o—

George G. Sommaripa has joined the staff of American Standards Association as head of the national standardization work on consumer goods.

—o—

Wilfred Sykes, president, Inland Steel Co., Chicago, has been elected to receive the 1948 Award of Merit of the Chicago Technical Societies Council. The award is made annually to the Chicago area citizen "who has made the most contributions toward

HAROLD J. NEWTON

cultivation of greater appreciation by the public of the part which technology, engineering and science have played in human welfare."

—o—

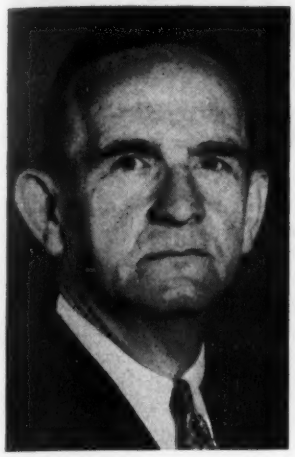
Harold J. Newton, sales manager, National Electric Products Corp., Pittsburgh, has been elected a vice president of the corporation. He has devoted his entire business career to the marketing of the company's electrical wire, cable, conduit and raceways.

—o—

James F. Donahue has been named executive vice president, Lamson & Sessions Co., Cleveland. He has been the vice president and a director since 1929 when the Foster Bolt & Nut Co., of which he was president, merged with Lamson & Sessions. **George S. Case Jr.** has been elected vice president and treasurer. He has been associated 18 years with the company, serving successively as general manager of the Chicago district, general manager of the Birmingham district, director, assistant to the president, and since 1942 as treasurer. **Robert G. Patterson** adds the office of vice president to his former title of general sales manager. He joined the company in 1935 and had formerly operated the Piston Service Co. of Indiana as its president. In 1943 he became general sales manager of Lamson & Sessions, and in 1945 was made a director. **James M. Rowe,** associated with the company since 1924 in the Birmingham district, has also been elected a vice president, retaining his former title of general manager, Birmingham plant, a post he has held since 1940.

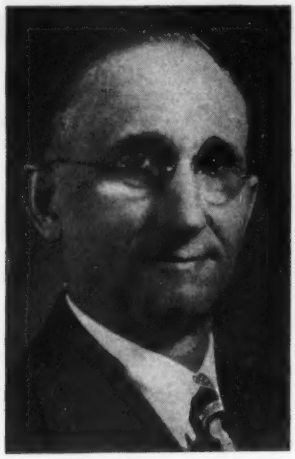
—o—

Albert B. Willi Jr. has been appointed assistant chief engineer in charge of sales engineering, Federal-Mogul Corp., Detroit. He has been



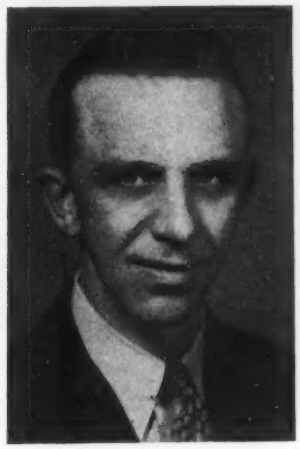
JAMES T. O'CONNOR

Appointed manager of sales, Cleveland district office, Carnegie-Illinois Steel Corp. Noted in STEEL, May 10 issue, p. 82



HARRY E. THIELE

Elected vice president of manufacturing, General Steel Castings Corp., Eddystone, Pa. Noted in STEEL, May 17 issue, p. 68



R. W. HELMIG

Who has been elected a vice president and director of Electric Products Co., Cleveland. Noted in STEEL, May 17 issue, p. 64

associated with the engineering department of the corporation since 1937.

—o—

Lt. Gen. Harold L. George, retired wartime commanding general of the Air Transport Command, has been appointed vice president and general manager, Hughes Aircraft Co. in Culver City, Calif. Since his retirement from the air force in 1946, Gen. George has been associated with the Peruvian International Airways as its president and general manager.

—o—

R. L. Cunningham has been elected president, Ohio Ferro-Alloys Corp., Canton, O., succeeding in the position left vacant by the death of **L. G. Pritz** late last year. Mr. Cunningham has been an officer of the corporation since 1941, most recently serving as executive vice president. He also is a director of the corporation. **W. W. Pritz** has been elected to succeed Mr. Cunningham as executive vice president. **W. O. Wetherell** has been elected secretary and treasurer, succeeding **H. G. Paisley,** retired.

—o—

Walter P. Barrett has been appointed manager, New York district office, Dravo Corp., Pittsburgh. He formerly was assistant manager of the Machinery Division district office in Philadelphia.

—o—

Robert M. Stanley has resigned as vice president in charge of engineering, Bell Aircraft Corp., Wheatfield, N. Y. **Roy J. Sandstrom** has been appointed executive chief engineer. He has been chief of technical services, in charge of military engineering work.

—o—

O. J. Fister has been appointed assistant to vice president, Oil Well Supply Co., U. S. Steel Corp. subsidiary.

—o—

Joseph P. Costigan, formerly production engineer, Erie, Pa., plant, Standard Stoker Co. Inc., has been appointed assistant works manager. He had formerly been assistant to the works manager, American Chain & Cable Co., Reading, Pa.

OBITUARIES...

Hiram J. Leonard, 67, director of Willys-Overland Motors Inc., and chairman of the board, Wilson Foundry & Machine Co., Pontiac, Mich., died in Toledo, O., May 17. He was president, F. B. Stearns Co., Cleveland, at the time of its liquidation in 1929. Mr. Leonard was an official of Moline Plow Co., when Willys-Overland acquired it in 1922. Later he was brought to Toledo by Willys-Overland as vice president.

—o—

Charles W. Brennan, 64, who founded his own concern, the Royal Brass Mfg. Co., Cleveland, of which he was vice president and general manager, died May 17 of a heart attack.

—o—

Philip E. Doell, manager of the Cleveland district sales office, Chemical Division, General Electric Co., died May 13.

—o—

Robert J. Nicholson, 71, who retired last year as president, B. Mercil & Sons Plating Co., Chicago, died May 11 in Wheaton, Ill. He had been associated with the company almost 30 years.

—o—

William J. Muhlitner, 56, president, Great Lakes Foundry Sand Co., Detroit, died May 11 after a six-month illness.

—o—

Charles E. Perkins, 61, dean of the sales engineers, Houde Engineering Division, Houdaille-Hershey Corp., Buffalo, died May 12. He was associated with the firm 20 years, 15 of them as a sales engineer.

—o—

Ellsworth G. Mandt, 58, southern district manager, Jaeger Machine Co., Columbus, O., died recently at his residence in Birmingham.

—o—

Harrison S. Chapman, 98, who organized the Field Force Pump Co. at Lockport, N. Y., died recently. In 1889 he opened a new plant in Elmira, N. Y., for the manufacture of farm spraying equipment, and remained in charge until the business was sold in 1939.

—o—

William A. Crawford, 86, co-founder, chairman and treasurer of the Griffin Mfg. Co., Erie, Pa., died recently. Mr. Crawford took active part in management of the firm until a week before his death.

—o—

Albert L. Schuh, 80, treasurer, Buffalo Scale Co., Buffalo, died May 12 after a brief illness. He had been with the company 61 years.

—o—

Henry F. Geier, 78, formerly general manager, Marshall, Mich., branch, Flint Foundry Co., died recently. He retired in 1936.

—o—

Dr. Robert J. Taylor, 41, member of the staff of Southern Research Institute, Birmingham, died May 10.

—o—

Ralph K. Weber, 81, retired president, Mt. Vernon, Ill., Car Mfg. Co., died May 14 in Los Angeles.

"A carbide die is like a cigarette!"

"YEP," says the wise die-room foreman, "the simpler carbide sheet-metal dies and a cigarette have one thing in common:

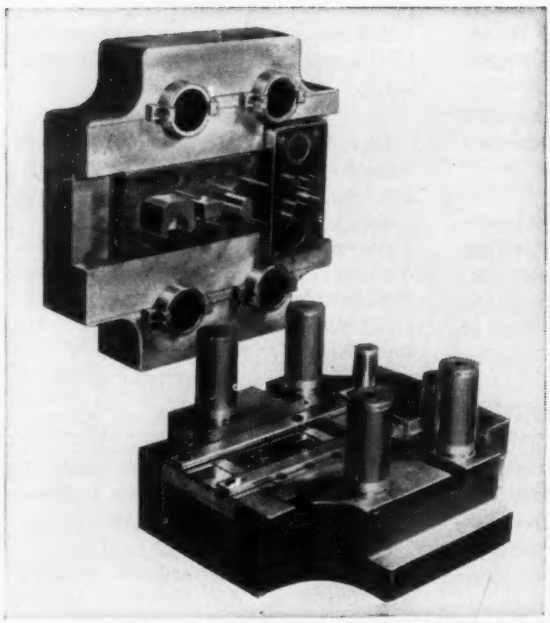
"It's cheaper, by a long shot, to make your own!

"Take the big cylinder-drawing die pictured below, for example. Think how much cheaper it would be to order just the molded, unfinished insert of Carboloy Cemented Carbide for a die like this—and assemble and finish the die in your own shop!

"It's not at all difficult, either.

"Follow the suggestions in the Carboloy DIE ENGINEERING MANUAL, and you'll find it *easy* to make these savings—not just by making your own new dies, but by converting your tool-steel dies to Carboloy, and replacing worn nibs yourself.

"The Carboloy manual will help you apply, design, fabricate and maintain your sheet-metal dies and punches at a much lower cost."



A complex die like this calls for the knowledge and ability of a professional die shop. This five-station progressive die produces a rotor and stator lamination with each stroke of the press. Ask your die maker about Carboloy Cemented Carbide. It means longer life and closer tolerances for this complicated type of die.

Write for your free copy of the 36-page DIE ENGINEERING MANUAL today. And if you need any further assistance, ask us to send around one of our engineers to help you with your problem.

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Engineering News . . . AT A GLANCE

TAKES PLENTY OF GAFF—Cyanide pots incorporated in the latest gas-fired industrial furnaces manufactured by Lindberg Engineering Co., Chicago, now carry a 1-year guarantee—roughly the equivalent to 8000 operating hours. New pot, the company reports, has been under test for the past 2 years in actual production line operations. Some of the furnaces with 8000 to 15,000 hours duty are still using the original test pots. The guarantee is an unheard of action in the pot furnace industry, although some makers in the past gave guarantees of 1500 to 2500 hours.

COOLING POWER OF SALT BATHS—A salt bath at 450° F provides the same cooling rate as water at room temperature in the pertinent 1300 to 900° F range, Harold J. Babcock of Ajax Electric Co. Inc., revealed recently before the Indianapolis chapter of ASM. Hardness attained in the salt bath quench at this temperature is not as high as it is in water due to length of time in cooling the former in air from Ms to Mf. This permits martensite formed just below the Ms temperature to be tempered before cooling to room temperature. Thus, he said, finishing the cooling cycle in water after equalizing in salt at the martempering temperature is not recommended, if the primary objectives of nondistortion and strain-free structure are to be realized.

GIANT WITH "GENTLE HANDS"—Shore to ship transfer of coal at Lorain, O., is accomplished with a high-lift coal-car dumper that is capable of picking up 120-ton cars, elevating them 75 feet, turning them over and emptying them of their contents into the hold of a vessel at the rate of a car-per-minute. Operated by the Baltimore and Ohio Railroad, the Heyl & Patterson equipment operates so smoothly and dumps coal so gently that it is referred to as the "giant with gentle hands." Two-way voice radio is used to co-ordinate actions of men involved in the operation. Twin-gate trimmer, located at bottom of the dumper's telescoping chute, acts like a pair of hands to place the coal gently in any spot of the ship's hold.

INSURES IMPRESSION ACCURACY—Accurate detail of the most intricate parts, from a fraction of an ounce to several pounds, is assured by a process for making precision copper castings refined by Universal Castings Corp., Chicago. The new technique in plaster mold casting, according to the concern, permits fabrication of nonporous castings with up to 95 per cent conductivity, producing them with a smooth finished surface.

SCIENCE "AT WORK"—Scientific equipment to meet almost any task is included in the new chemistry and physics building opened recently by Socony-Vacuum Oil Co. Inc., in Paulsboro, N. J. Facilities make it possible to study radioactive elements as tracers in overcoming difficult lubrication problems, or analyze chemical reactions by electronic methods. The "plant" includes an emission spectrograph that reveals metals in specks of material so small than ten of them fail to cover a pin head. Another instrument, the mass spectrograph, analyzes mixtures of gases in a manner similar to a cream separator. It swirls the particles with powerful electromagnets to catch the heavier ones in the outside of a circular path while lighter ones are detected on the path's inside.

OVERCLEANING A DANGER—Efficient operation of increasingly complex mechanical and hydraulic machines depends in a large part not only on clean oil, but also on clean systems. Use of a so-called modified lubricant, it is pointed out, is one way to keep both old and new systems in the "pink" of condition. Cleaners of this type attack wet sludge deposits, dissolve binding material adhering to metal surfaces, and disperse the insoluble sludge through the cleaning oil so it will be carried to the filters and separated. (p.90)

PAYLOAD INCREASER — Where payloads are vital considerations in transportation equipment, use of texturized or design strengthened metals results in considerable reduction of dead loads. In other applications, it is pointed out, a reduction in gage made possible by the strengthening effect of the surface treatment, may permit sufficient saving in metal cost to cover expense of special processing. According to Rigid-Tex Corp., its process also makes possible such patterns which otherwise would necessitate the use of a 40 per cent thicker plain sheet to obtain the same transverse rigidity. (p.94)

NEW TUBING PROCESS — Any metal that can be resistance welded can be used in the tubing process developed by W. R. Ames Co., San Francisco, for producing irrigation pipe. It is reported to be adaptable to a wide range of sizes and gages, and completely automatic. Process, developed with the aid of Christie Machine Works, supplier of special parts and assemblies, makes possible wall thickness ratios of less than 1/250 of tube diameter. Change-over from one diameter to another requires only 60 minutes shutdown. (p.98)

SPEEDS STAINLESS TESTING — Procedure for specification testing of stainless steels for chromium, nickel and manganese using the Beckman spectrophotometer is reported to yield sufficient accuracy at the same time speeding up the work to a degree faster than conventional methods. According to the authors, the method provides satisfactory results on NBS standard steels and also is suitable for all the common types of stainless steels. (p.108)

HOW TO MAINTAIN AND RECONDITION

LUBRICANTS in Metalworking Plants

Efficient operation of increasingly complex mechanical and hydraulic machines depends in a large part upon clean oil in a clean system. Coordinated use of methods described here can contribute substantially to lower maintenance costs on lubricants and equipment, as well as to higher production resulting from less downtime

By E. L. H. BASTIAN
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New York

MAINTENANCE of the lubricating system in any metalworking plant implies precautions necessary to insure cleanliness of both machine and central systems, as well as steps to prevent entry of extraneous dirt and other contaminants. Obviously, such precautions are just as important as careful handling of the lubricants in storage and through dispensing equipment, if full utilization of oil quality is to be realized.

Maintenance of machine and central lubricant systems can be discussed logically under three subjects:

1. Preparation, cleaning and inspection of new systems.
2. Cleaning of oil systems when changing lubricant.
3. Control of oil quality and condition during service.

In new machine installations using a central lubricating or hydraulic system it is advisable to clean thoroughly before introducing the new oil in order to remove any white lead, thread, gasket compound, metal chips, mill scale from piping interior, or any other contaminants which may be present.

Inspection and such manual cleaning as possible should first be made. Although kerosene or chlorinated solvents are occasionally used for cleaning hydraulic and circulating oil systems, their use is not generally recommended. The viscosity of such liquids is usually so low that large solid impurities cannot always be held in suspension and removed.

If some of the flushing fluid remains in the system, it may substantially thin out the lubricating oil and also affect its stability chemically. Chlorinated solvents tend to hydrolize under certain conditions to form acids corrosive to various metals in the system.

Powerful alkaline and acidic type cleaners if left in the system being cleaned (in even very small quantities) will adversely affect the oil then put in and cause corrosive attack of metal in the system. Such cleaners, if employed, must be carefully handled with strict regard to the manufacturers instructions to avoid difficulty.

Modified Lubricant Recommended—Preferably, the use of a so-called modified lubricant is recommended for cleaning and flushing both new and old systems. A modified lubricant, in the sense described, is one which combines both cleansing and lubricating properties.

Cleaners of this type attack wet sludge deposits, dissolve binding material adhering to metal surfaces, and disperse the insoluble sludge through the cleaning oil so it will be carried to the filters and so separated. This characteristic of modified cleaner lubricants is secured by combining light lubricating oil with a solvent for both water and oil phase contaminants. Essentially, such solvents remove the water film from deposits in an old system and allow the oil to permeate the sludge and disperse it. These cleaners have a high flash point (about 250° F) which minimizes fire hazards encountered in the plant with light volatile solvents.

In badly rusted old systems they will not

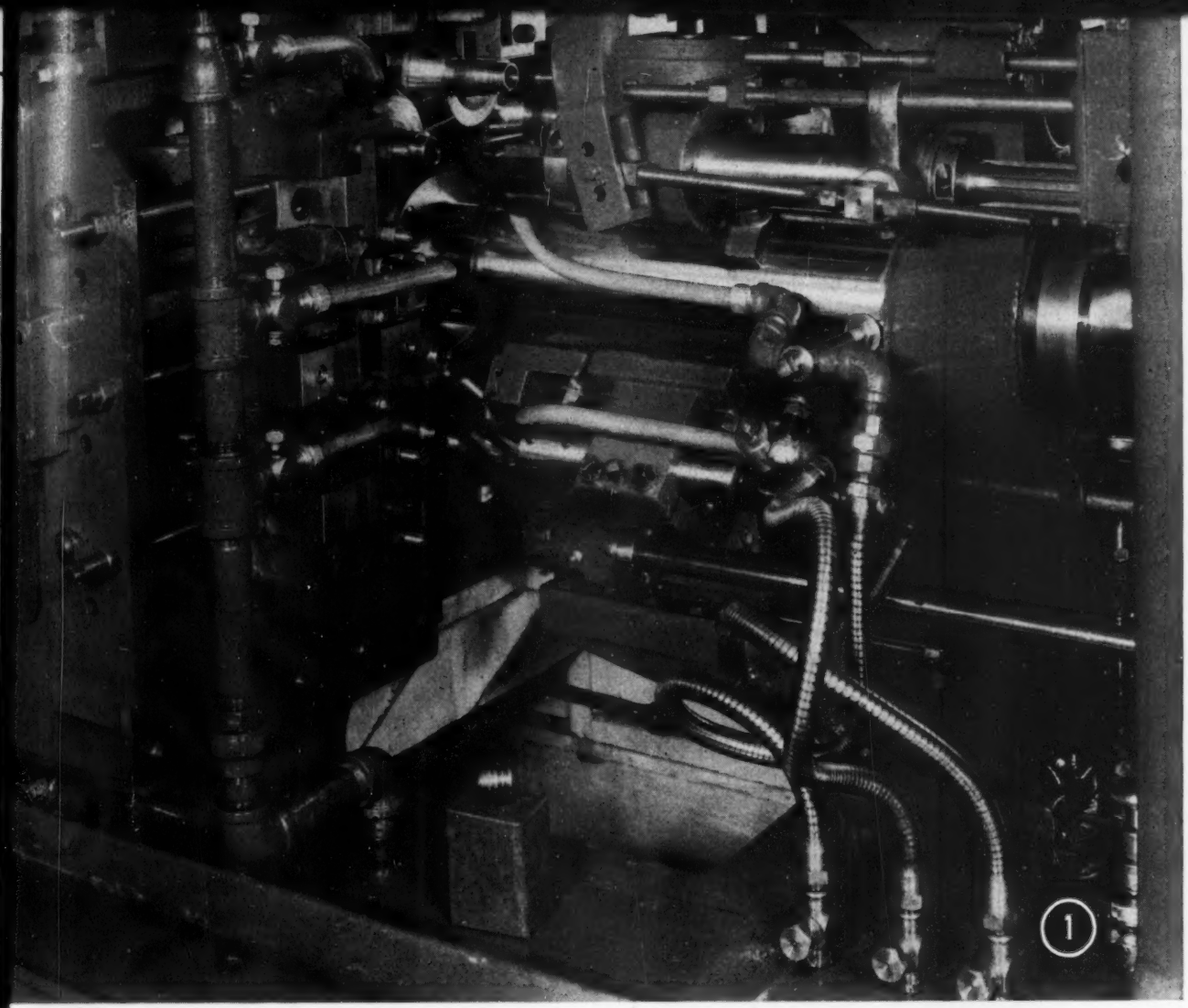


Fig. 1—Typical lubricating setup on a Cone automatic screw machine

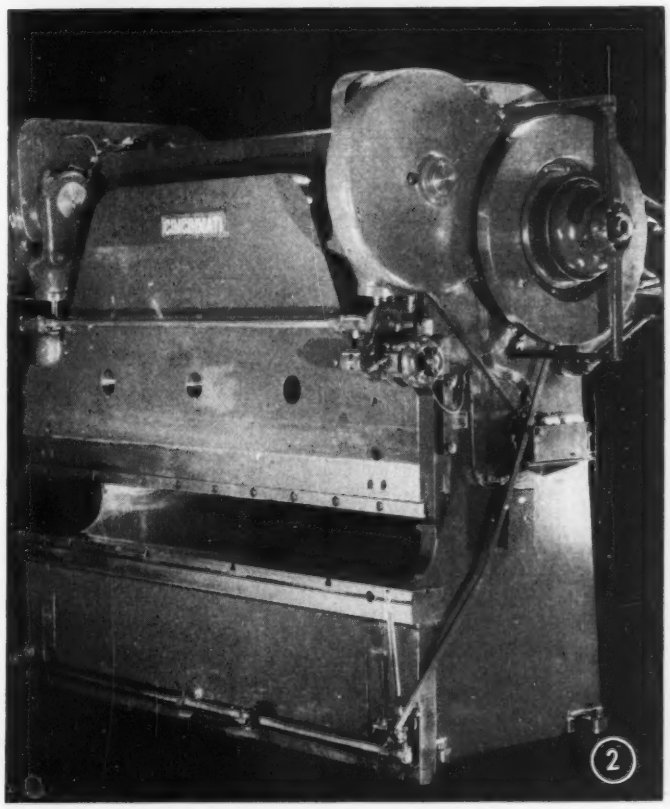


Fig. 2—Cincinnati press brake showing lubricating arrangement. Proper maintenance of this type of equipment can constitute an important saving in manufacturing cost

remove all tightly bound rust deposits from inferior surfaces, but will, by turbulence due to circulation, remove light rust and other solids. These cleaners contain a high concentration of antirust additives so that their use in cleaning and flushing is further enhanced by a "plating out" on cleaned metal surfaces of rust preventive coating. If small amounts of such cleaners are accidentally left in the system they will not seriously affect the character or function of the lubricating oil charge.

Overcleaning—Another advantage of modified lubricant cleaners is that they will not overclean the system. This may seem a strange statement after so much emphasis has been placed on cleaning and cleanliness. However, some drastic cleaners clean so well that rusting occurs on cleaned steel surfaces before the lubricant can get to it to protect it. Laboratory tests indicate that thoroughly cleaned steel plates, under normal average atmospheric conditions, will develop rust within 10 seconds that can be seen

under a 15-power microscope.

There are other lubricant application points in the plant which also require periodic cleaning for optimum service. These are, for example, grease lubricated bearings, oil bearings, gear cases, electric motors, etc. Most of these, unless of sealed construction are vulnerable to entry of contaminants which must be removed.

Grease-lubricated bearings may be cleaned merely by forcing a quantity of new grease through, in the case of journal bearings. For antifriction bearing cases it is desirable to flush with a light flushing oil. If better solvency is required, use mineral spirits rather than kerosene. The former will evaporate dry whereas kerosene will not do so readily, thus diluting the lubricant subsequently applied and also increasing fire hazards. Grease-lubricated bearings (antifriction type) are usually cleaned and replenished about every 6 to 12 months. Oil-lubricated bearings (both plain and antifriction) are cleaned and flushed every 3 months as a rule.

Gear cases should be drained, cleaned and flushed with a light flushing oil or cleaner about once or twice a year dependent upon service severity and contaminating conditions. The same applies to circulating systems, sumps, enclosed chain drives, etc.

Cutting Oil and Coolant Systems—Cutting oil and coolant systems in the machine shop should also receive regular attention to insure best use of the oil or emulsion. These fluids become contaminated rapidly from extraneous materials, such as dust, dirt, metal particles, chips, abrasive grits, etc. Obviously, much of this contamination is inherent in the natural service of these oils necessitating periodic reconditioning and reclaiming procedures.

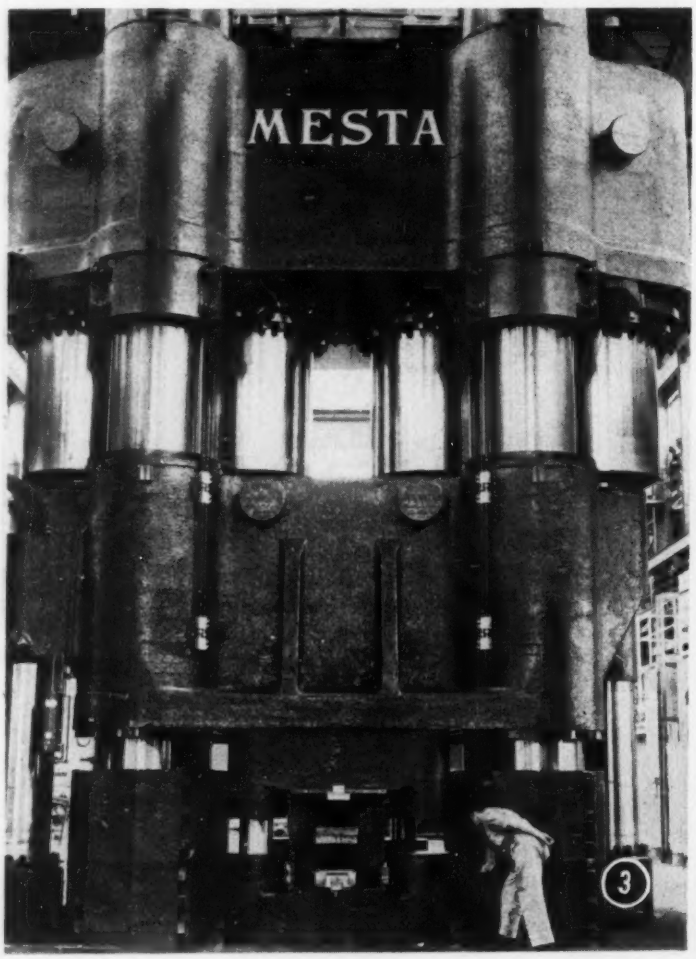


Fig. 3—Farval lubricating system services this 18,000-ton Mesta hydraulic die forging press located at Wyman-Gordon Products Corp., North Grafton, Mass.

Systems of this type should be drained, manually cleaned and flushed as frequently as average service conditions warrant. Frequency of cleaning may vary from several weeks to several months—but rather too soon than too late. Excess build-up of contaminants (particularly those of an abrasive or chemical nature) will ruin work finish, tool life and production schedules. In the case of soluble oil emulsions, excessively extended service may result in emulsion deterioration (breaking, stratification, inversion, putrefaction, bacteria introduction and propagation, etc.) which can cause subsequent delays and expense from emergency maintenance at a time less easily afforded than the regular maintenance period.

Recovery and Reconditioning—It is recognized that in addition to extraneous contaminants which may enter such lubricants and jeopardize performance, there are other contaminating substances created by the effects of service conditions, such as heat, pressure, catalytic agents, moisture, excessive aeration, mechanical turbulence, etc.

Principal contaminants resulting from such service are:

1. Extraneous dust and dirt
2. Moisture and water
3. Chemically active gases and fumes
4. Lint, threads, paper shreds, tobacco, etc.
5. Rust and other oxides
6. Carbonaceous deposits
7. Lacquer, gum and sludge
8. Other oil deterioration products
9. Metal fines, chips, abrasive grits
10. Miscellaneous contaminants.

Some of these, as previously described, can be minimized or prevented completely by proper oil handling, preventive maintenance, and cleanliness of lubricating systems. Others, such as oil deterioration products, metal chips, abrasive grits, etc., formed in normal service, can only be removed (as they should be) by suitable recovery and reconditioning methods.

Such methods as the following may be used singly or in combination to recondition oils for continued use:

1. Gravity tank settling (precipitation)
2. Coagulation treatment (settling)
3. Filtration
4. Centrifuging
5. Magnetic separation.

Gravity Settling—Gravity settling of still oil (there must be no agitation) depends upon specific gravity difference of constituents for separation. Application of heat in the case of (*Please turn to Page* 114)

Seen and Heard in the Machinery Field

By GUY HUBBARD
Machine Tool Editor

FINISHING BY ROLLING: One of my favorite research men is John O. Almen of the Research Laboratories Division, General Motors Corp., Detroit. He combines to an unusual degree inventiveness, infinite patience and thoroughness in subsequent research and development involved in making inventions of practical use, and ability to stand up on his feet and tell about his work in an interesting and wholly unassuming manner—when it has been completed.

I am having some correspondence with Mr. Almen regarding the history of rolling as a shop process for increasing the smoothness of turned surfaces. He has managed to get me keenly interested not only in digging up early references to this method but also as to whether the old-time craftsmen appreciated that it added strength, increased hardness and gave better wearing qualities.

I personally recall having seen rolling employed as a finishing method in automatic screw machines as far back as 1908. However, it undoubtedly goes way back of that—especially on axle work in railroad shops. Before we get through delving into this subject I expect that we will uncover some interesting stories.

Mr. Almen says of his investigations: "My purpose is to indicate, if possible, that many old shop practices were the equivalent of what we assume to be modern discoveries. The advantages of these supposed 'new processes' were obtained long ago, but each practice may have been applied without clear understanding of the manner in which the benefit was obtained—or it may be that a wrong reason was assumed."

After all, Indians were using infusions of foxglove leaves as a heart medicine long before that fancy word "digitalis" came into use here in America. Also I recall a particularly nasty-tasting liver concoction used with success by an old family doctor who never had heard of vitamins.

SCHOLARSHIPS FROM INDUSTRY: Any industry which desires to perpetuate itself must do some solid advance planning on personnel as well as products. All of us are a bit loath to admit that men—as well as machines—become worn out and obsolete. That harsh fact is becoming more and more evident as the tempo of industrial life constantly becomes more rapid—with corresponding increase in mental wear and tear.

A prime source of future personnel, particularly in the smaller industrial communities, are those ambitious young people who are born and brought up in the community and who have talent and strong desire to "make good". Why should such reservoirs of talent be drained by the big cities—leaving local industries in danger of human dry rot? The primary answer is that too many industries have made little or no effort to hold the interest of likely local boys through educational encouragement or any other kind.

The directors of Monarch Machine Tool Co., located in the typical "smaller" industrial community of Sidney, Ohio, have just made a big move in the right direction—one which I believe is unique in the history of the machine tool industry.

At a meeting during the week of May 6, Monarch unanimously approved the establishment of a fund of $30,000, from which—over the next five years—15 scholarships of $2000 each, three each year, will be awarded to boys graduating from Shelby County schools with high scholastic records and with ambition to pursue the study of mechanical or electrical engineering at any leading engineering college or university in Ohio or elsewhere.

Each scholarship will be disbursed at the rate of $500 annually toward a complete four-year engineering course. Selection of candidates will be by a permanent board of trustees made up of the judge of the Common Pleas Court, superintendents of county and city schools, director of the parochial school in Sidney, and one Monarch executive.

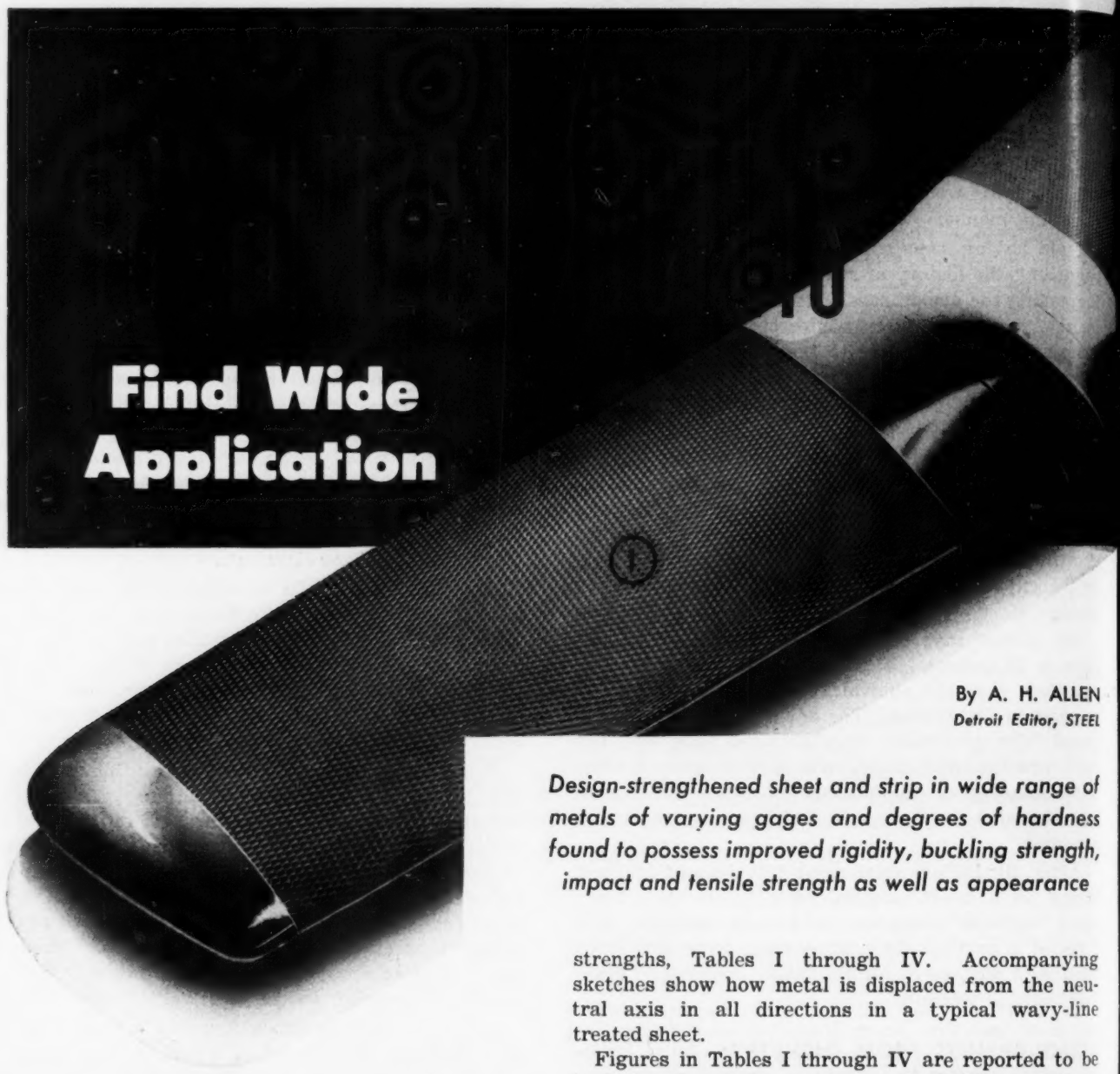
This educational plan doesn't have a lot of strings tied to it. As Jerome A. Raterman, president of Monarch puts it: "Our emphasis is on mechanical or electrical engineering because it is becoming clearer every day that Sidney is destined to grow as an industrial city. We hope that winners of these scholarships will want to give Sidney companies preference in seeking jobs after graduation. Employment with a Sidney company is not, however, a condition for receiving one of these scholarships."

As one born and brought up in a typical small New England "machine tool town", I believe that I have more than ordinary appreciation of what this Monarch Plan will mean to young fellows in Sidney and throughout Shelby County. I predict success for this plan. I hope that it will inspire other progressive machine tool builders to do likewise. The boys of today will be the machine tool builders of the future—and the way things are going "they've got to be good".

DEAN KIMBALL'S SPECIALTY: Those who attend the sales refresher course, sponsored at Cornell University this July by the machine tool builders and machine tool distributors associations, are destined to learn about "Economic and Social Influence of Machine Tools" from a man who can well be called "the Arnold Toynbee of the machine tool industry". That man is Dean Dexter S. Kimball, emeritus, Sibley College of Engineering of Cornell.

Dean Kimball, now past 80 but active as the average man of 60, originated that famous definition, "The Master Tools of Industry", for machine tools. Don't let the rather heavy-sounding title of his lecture mislead you.

Find Wide Application



By A. H. ALLEN
Detroit Editor, STEEL

Design-strengthened sheet and strip in wide range of metals of varying gages and degrees of hardness found to possess improved rigidity, buckling strength, impact and tensile strength as well as appearance

DESIGN-STRENGTHENING and texturizing of sheet and strip metals, either ferrous or nonferrous, by a new high-speed precision process which produces a three-dimensional pattern resulting in the redistribution of metal about the neutral axis to create unidirectional rigidity, is a formal and somewhat complicated definition of a method developed by the Rigid-Tex Corp., Buffalo, for producing what it has trade-named Rigidized metals.

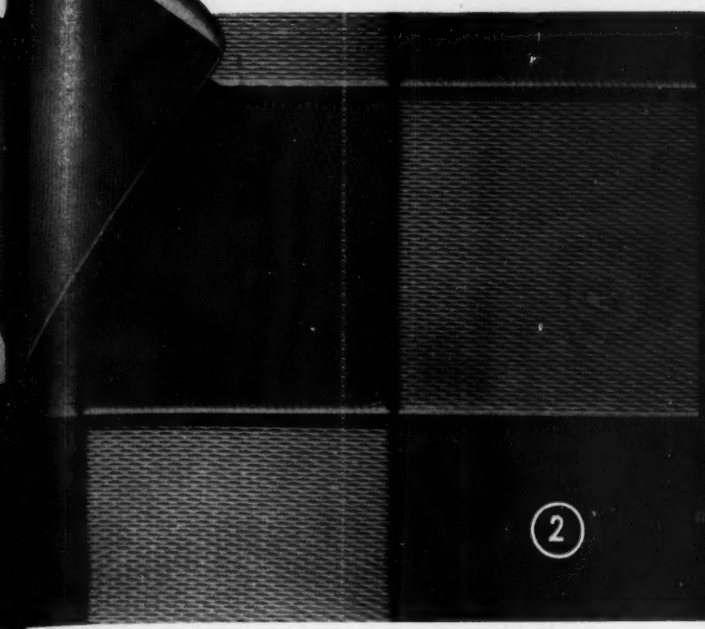
Culminating several years of experiments in methods to produce economical sheet and strip which is design-strengthened in all directions, in contrast to corrugated material, this patented process has been adapted to a wide range of metals in varying gages and of varying degrees of hardness. Properties of the resulting material suggest considerably enhanced values in terms of strength, appearance or texture, and utility.

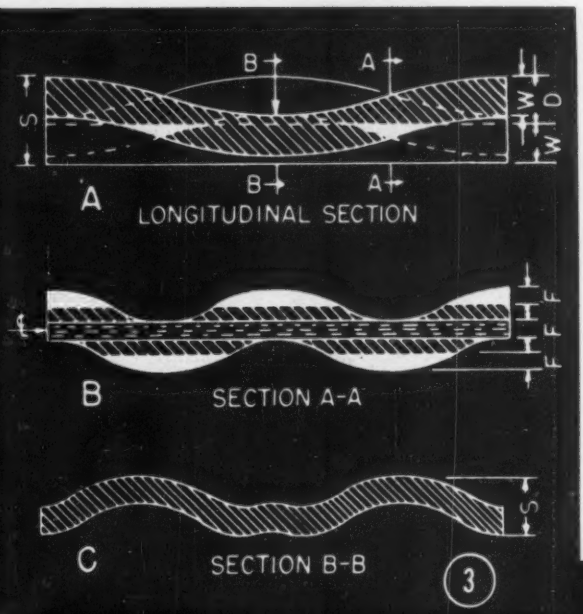
From the standpoint of strength, this redistribution of the metal in a flat sheet by application of a texture has been found to result in a considerable gain in rigidity, buckling strength, impact and tensile strengths, Tables I through IV. Accompanying sketches show how metal is displaced from the neutral axis in all directions in a typical wavy-line treated sheet.

Figures in Tables I through IV are reported to be typical and not the maximum obtainable variations resulting from the shape and depth of the design applied. Increase in strength possible leads to the obvious conclusion that less weight of texturized metal is required to produce equivalent strength. Thus, calculations indicate for the equivalent strength developed by 1 pound of plain stainless steel, only the following amounts of design-strengthened sheet would be needed:

0.52-lb. if stressed in tension
0.75-lb. if stressed in buckling
0.53-lb. if stressed in bending
0.72-lb. if subject to impact

Thus in transportation equipment, such as aircraft, trucks and railroad trains, where payloads are vital considerations, increases may be possible by use of the design-strengthened sheet metals in place of flat sheets, resulting in reductions in dead loads. In other applications, it is stated that a reduction in gage, made possible by the strengthening effect of the surface treatment, may permit sufficient saving in metal cost to cover the cost of special processing, giving the added values of appearance and





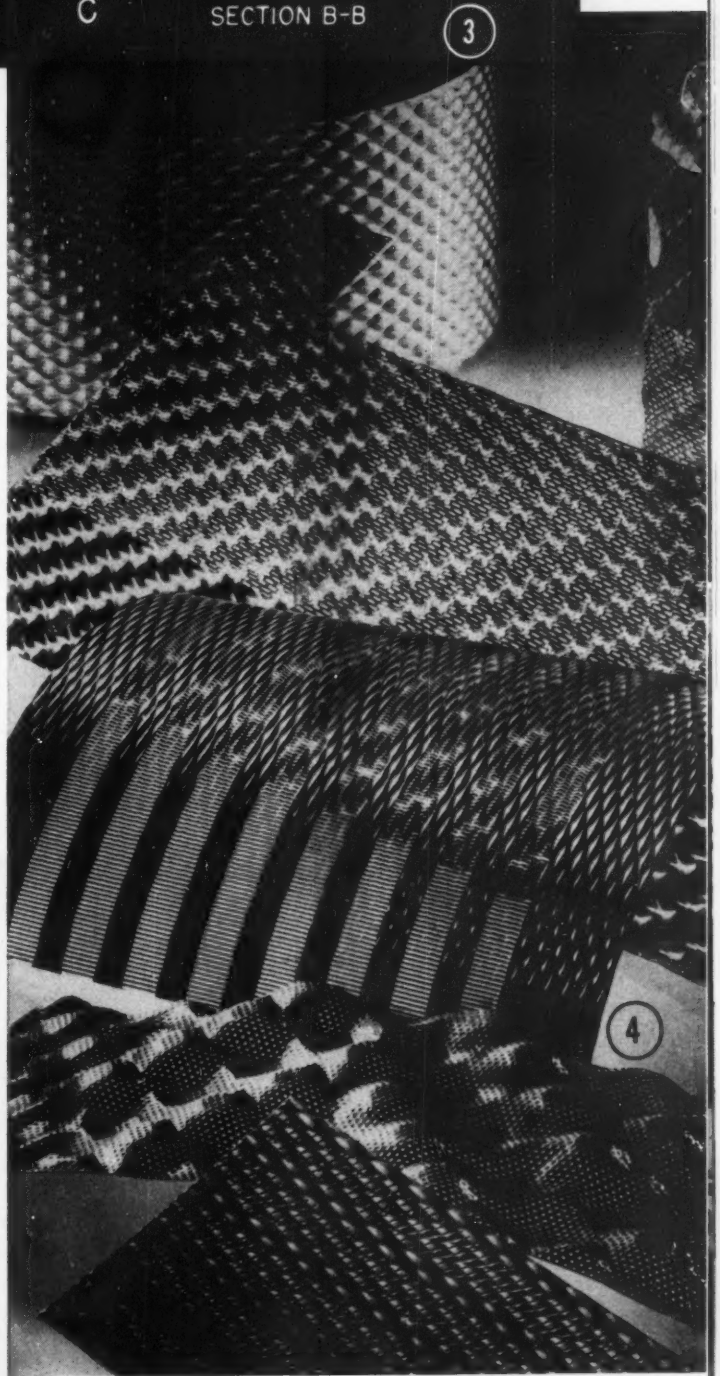


Fig. 1—Glare is eliminated from main portions of this stainless steel sun visor for motor vehicles by roll-patterning the strip, which also provides higher structural properties

Fig. 2—Checkerboard effect is obtained in these design-strengthened stainless steel wall tile by turning adjacent tile 90 degrees from one another. Same basic pattern is rolled into both light and dark elements, the difference being a matter of light reflectivity

Fig. 3—Three cross-sections of wavy-line pattern No. 6 showing how metal is displaced from the neutral axis in all directions. (A) Longitudinal section; W—original or weight thickness, D—depth of pattern, S—effective or section thickness. Darker section indicates area of uniform cross section. (B) Section A-A: E—area of uniform cross-section, F—maximum thickness of metal distributed beyond limit of plain sheet; Note: Solid areas represent metal redistributed away from neutral axis and beyond limit of plain sheet. Uniform cross section, area "E", not found in conventional corrugated material. (C) Section B-B; S—effective or section thickness

Fig. 4—Texturizing of perforated metal provides an interesting material for radio grilles and numerous items of household equipment

utility at practically no cost. This is, of course, particularly true in the case of high-cost metals such as stainless steels, high-nickel alloys and even aluminum alloys.

In certain patterns, a 40 per cent thicker plain sheet would have to be used to obtain the same transverse rigidity. Hence, in cases where this physical characteristic is the determinant, the breakeven point for the use of the patterned sheet is reached when 40 per cent of the metal cost is equivalent to the cost of processing. Reduction in weight also contributes importantly to portability, a key factor in the design of many products such as containers, loading and conveying equipment, airborne equipment, etc.

With respect to texture or appearance, the surface patterning treatment probably comes in for the great-

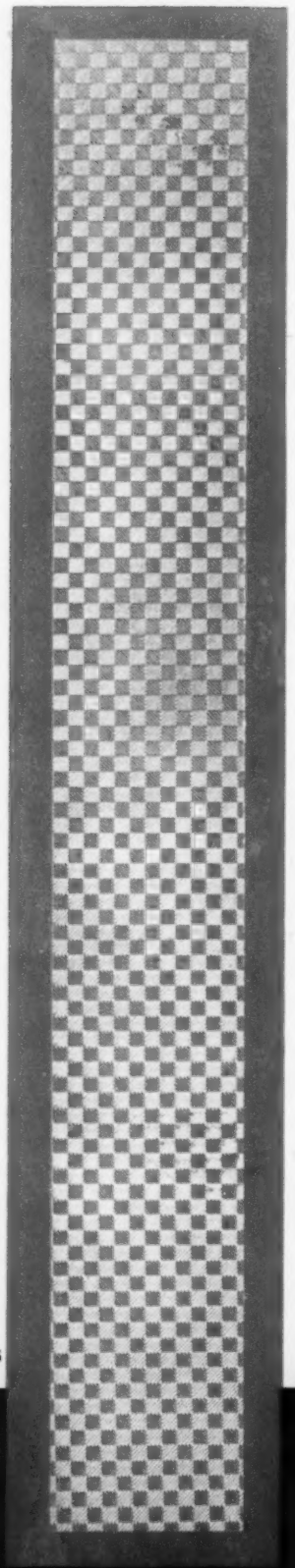


Fig. 5—Fourteen of the 20-odd basic patterns developed for patterning sheet metal. Except for Nos. 5, 8, 9 and 10, the depth of indentation is relatively small, designs stressing mainly appearance and controlled light reflectivity

Fig. 6—Among numerous automotive applications are scuff plates for doors and bottoms of jump seats in taxicabs, shown here. Seat backs in motor coaches also have been given similar protection for pleasing appearance and nonmarring qualities

Fig. 7 — Patterned stainless steel sheet and one with a plain polished finish. Note how pattern breaks up light reflection to a subdued and uniform character

est attention, since it is tied in closely with modern design and eye-appeal of the finished product. "Textured" surfaces in a wide variety of patterns offer sharp contrast to drab, flat surfaces, or even highly polished surfaces which tend to reflect light glare, show up scratches and mar easily. A surface pattern distributes light evenly over the entire area, with raised portions highlighted, as shown in an accompanying illustration. Hundreds of applications include both interior and exterior metal panels for homes and buildings, radio grilles, scuff plates, metalware, lampshades, novelties and many others in which eye-appeal, controlled reflectivity of light, and nonmarring qualities or resistance to vandalism are desirable.

There is no hard and fast dividing line between the various strength-appearance-utility values of the "textured" metal sheet or strip. In certain applications, one factor may be of more importance than the others, but there is usually some overlapping of the three. A pattern which may be considered definitely utilitarian in character is one engineered and used for heat-exchanger systems. Here a plain flat sheet is combined with another carrying a dimpled pattern, which allows ⅛-inch air space between the sheets for the flow of air or liquid for heating or cooling.

A typical application is in the leading edge of an airplane wing (the B-36) where the space between the two sheets can be used as a duct for hot engine exhaust gases to de-ice the wing surface. Numerous other combinations of plain and patterned sheets have been proposed where the internal space can be used for insulation, soundproofing etc. In these cases, the patterned sheets have greater surface area per square foot than plain finishes, affording extra advantages in heat-exchanging applications.

Obviously these patterned metals, both ferrous and nonferrous, have peculiar nonskid advantages, suggesting applications, particularly in aircraft, for stairs, flooring, walkways and the like. Controlled light-reflecting properties have utilitarian values in drying equipment of the infrared type, headlights and lighting fixtures. Furthermore, punch and layout marks can be incorporated in the pattern to guide assembly workmen and permit the positioning of fastenings without special jigs or fixtures.

Redistribution of metal away from the neutral plane

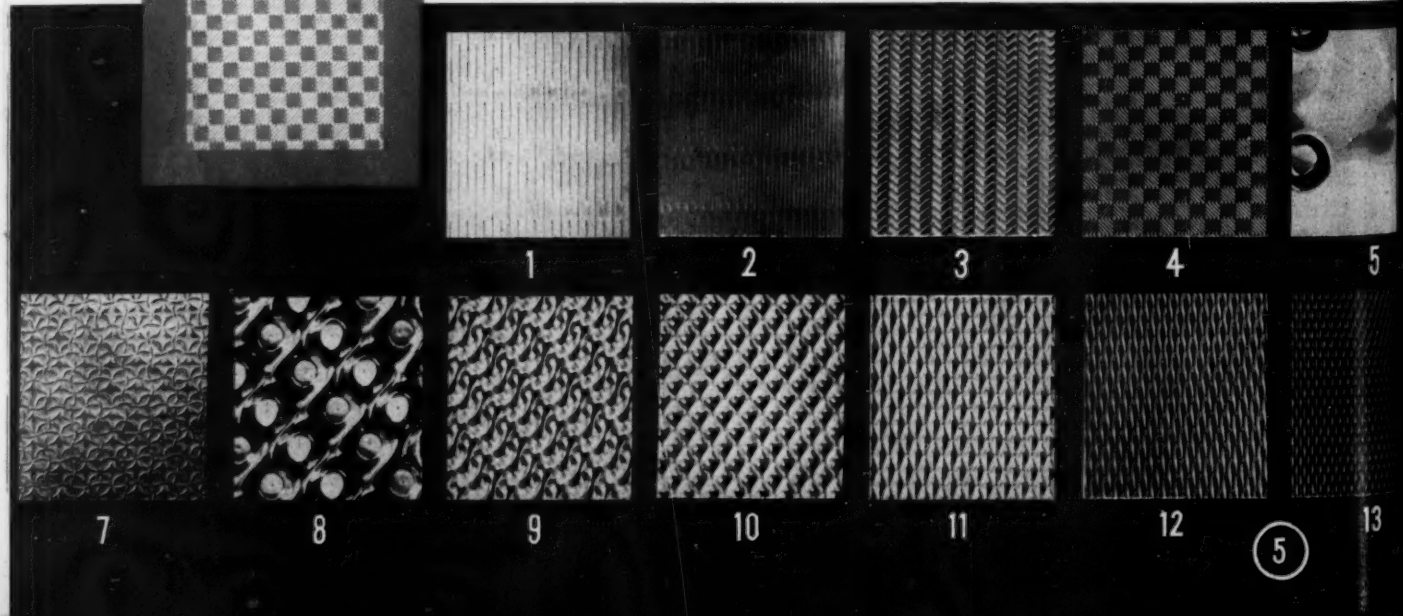


TABLE I

Use of simple beam tests to determine flexural rigidity values (EI) on three metals, under the formula, $EI = \frac{WL^3}{48D}$, where W is the weight applied to the sheet between supports which are L inches apart, and D the resulting deflection in inches.

	Rigidity values		
	Cold-rolled finish	Rigidized	% increase
S.A.E. 1010 steel—transverse	47.6	59.6	19.5
S.A.E. 1010 steel—longitudinal ..	59.0	67.4	14.2
17-7 stainless steel, full hard	14.29	25.88	88.0
248-T aluminum alloy	7.24	15.07	108.0

TABLE II

Three comparisons of buckling strength before and after design-strengthening show:

	Buckling Strength p.s.i.		%
	Plain	Rigidized	increase
S.A.E. 1010 steel (ultimate)	32,700	55,250	70
S.A.E. 4130 steel (ultimate)	61,300	88,500	44
17-7 stainless steel, full hard ..... (proportional limit)	44,000	59,000	35

TABLE III

Impact figures showing depth of deformation caused by a plummet dropped 11 ft 7½ in onto a 4-in disk supported on a wooden ring with 2-in bore are as follows:

	Depth of deformation, inches Material—17-7 stainless steel		
Gage	Commercial finish	Rigidized	% Reduction in deformation
24	0.218	0.171	21
22	0.187	0.148	20
20	0.191	0.127	33
18	0.118	0.072	39

TABLE IV

Comparative tensile tests on annealed stainless steel sheets show the following:

	Cold-rolled finish	Rigidized	% increase
Yield strength, p.s.i.	38,950	75,100	92.8
Ultimate strength, p.s.i.	90,600	105,900	16.9
Elongation in 2 in., %	63.5	40.5	...

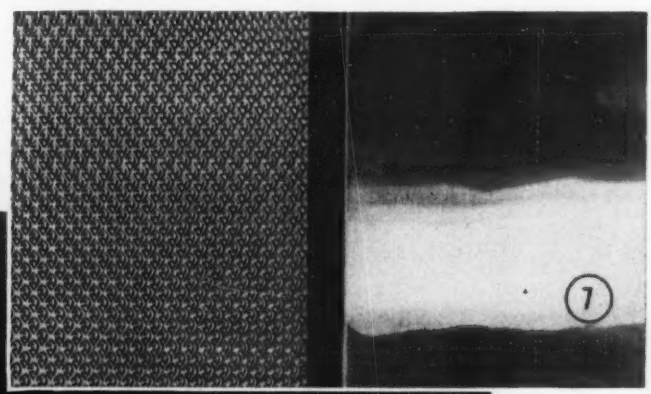
of the patterned sheet is the basic explanation of the resultant increased strength and rigidity. This sounds relatively simple, yet it involves scientific design of the pattern shape, complex and expensive tooling and extremely accurate process control to bring about the optimum structural gains within the deformation limits of the material as well as within other economical and practical possibilities of the process.

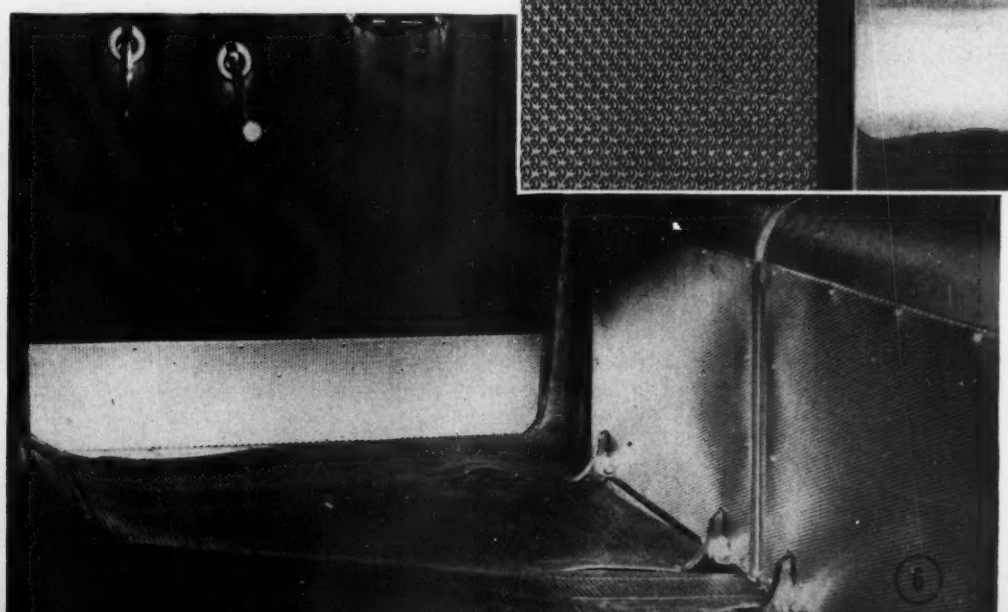
Essentially, what is involved is the careful tooling or engraving of a set of hardened matched die-rolls which then must be synchronized and set up carefully for clearance to maintain a uniform impression across the surface of both sides of the sheet. Both continuous and individual sheet processing is possible in widths up to 36 inches, and in original sheet thickness of from 0.005 to 0.125-inch. Production of sheet up to 48 inches wide is now under study.

Pattern of many modern construction elements comprises a skeleton frame, representing a system of mutually perpendicular members, covered with plates or panels. In such structures considerable mutual reinforcement is taking place between the framework and the panel covering. Panels act as diagonals, transmit shear loads, accept loads perpendicular to their faces and transmit them to the framework. The skeleton reinforces the panel edges, transmits tension and compression forces. These two mutually reinforcing systems can be observed in such basic construction as trailer bodies, railroad cars, floors and walls of buildings, to mention only a few. Presence of supports at the edges of the panels naturally is of prime influence on the carrying ability of the panel itself, while the framework is stabilized against side buckling by the panels.

A rectangular plate of design-strengthened metal has increased rigidity in all directions and can transfer loads efficiently to its four edges. It also benefits from all edge supports, while a simple corrugated sheet derives little benefit from supports at edges running along the corrugations. Therefore, the former construction shows particular advantages in applications involving rectangular panels with edge/length ratios between 2 to 1, through 1 to 1 and 1 to 2.

Weight saving and payload improvement related to elimination of dead weight offer additional and decisive advantages in the transportation field. Cost of material is here overshadowed by the cost of carrying the dead weight during the average service life of the vehicle. The result is that in any transportation medium some flat (*Please turn to Page* 119)





Continuous joining and shaping on mandrels produces irrigation tubing from 20 to 24 gage strip at rate of 15 feet per minute

Pipe Formin

By GERALD ELDRIDGE STEDMAN

CONTINUOUS production of welded irrigation pipe tubing in diameters from 3 to 10 inches in a twin-seam tube mill recently developed by W. R. Ames Co., San Francisco, has increased production, reduced cost, and improved strength and uniformity of pipe. Original pipe fabrication methods used galvanized sheets which were rolled, riveted and soldered. Later fabrication methods turned to lock seaming for pipes to be used under pressure.

Some 5 years ago with a great increase in use of pressurized pipe for irrigation, it became evident that a new method of manufacture had to be developed satisfying the following requirements: Light weight, strength to handle pressures encountered, flexibility as to gage and diameter and economy of capital invested and labor expended. The company was unable to have a machine built that filled above requirements and finally developed its own machine.

Original conception was to make an envelope by superimposing one flat sheet of steel upon another and welding the two long edges of the sheets together, to be later formed into perfect pipe diameter by the insertion of a mandrel. It was established that the welds would hold, permitting the forming without failure at the seams.

New Ratio—It has always been a rule-of-thumb law in the fabrication of welded tubing that the wall thickness could never be less than 1/60 of the tube diameter. Process developed by the company with special parts and assemblies made by Christie Machine Works, San Francisco, makes possible wall thickness ratios of less than 1/250 of tube diameter.

Cold reduced coils of 20 to 24 gage strip steel, averaging 2000 pounds, in widths from 6 to 16½ inches as determined by the tube diameter of 3 to 10 inches are placed on reels, one staggered under and behind the other, and strip is fed into tube mill. One strip is fed over and another is fed under the mandrel anchor.

Mandrel is flat at mouth of tube mill, about ¼-inch thick, and holds this shape until a few feet past welding wheels and first set of driving wheels. Here it starts a taper from a flattened oval to a true diameter, Fig. 2. This transition is accomplished in about 6 feet. The total length of the mandrel is about 27 feet. Each diameter tube requires a different mandrel.

Transition from flat to round is on brass, to cut down friction on pipe steel sliding over it. Mandrel is anchored at mouth of tube mill and is supported along its length by idling rolls.

Start of Tube—First operation of tube mill is seam welding of edges of strips being fed in above and below mandrel. Two resistance seam welders are mounted face to face on wheeled carriages which operate along a track. Their position is reset to accommodate different widths of strip for varied pipe sizes.

After matched steel strips, moving outside flattened end of mandrel, come out from welding area of tube mill, they are engaged by two pair of knurled driving wheels at the edges by a ½-inch flange that has been left between welded seam and metal edge. Welded steel tube envelope is then pushed over the mandrel taper section and envelope gradually assumes roundness with flanges protruding horizontally from sides of tube. Starting at the junction of taper to round section of mandrel, flanges of tube are engaged by first of four stands of synchronized driving wheels.

Tube with flanges protruding is driven along mandrel to a stand of slitting wheels where flange is trimmed off at edge of welded seam. Tube flows in its 15 feet per minute passage to the next station where flanges of each edge are simultaneously laid down by setting rolls operating against pipe flange edge. Setting rolls are paired to operate both internal and external to mandrel, internal set being an integral component of mandrel.

After the seams are laid against tube, it progresses to the sizing station of the tube mill, represented by an oversize plug in the mandrel, where the material is stretched past its elastic limit, giving the tube a permanent set as to roundness and diameter.

Flying Saw—Progressing off the mandrel, tube comes along idling rolls into position underneath a band saw and is cut off into predetermined lengths, as controlled by a photoelectric cell. Band saw, mounted on a travelling carriage, Fig. 3, engages the tube and moves with it, makes its cut, lifts, and returns automatically to its original station in time to start next cut.

Steel tube lengths, thus fabricated and cut, leave tube mill and are deposited on transfer arms which lift them and by gravity roll them onto a resilient belt which stacks each piece of tubing into a storage pile.

After fabrication and cut-off at the mill, a coupler is brazed on one end and a collar on the other end of a length of tube. The entire assembly is hot dip

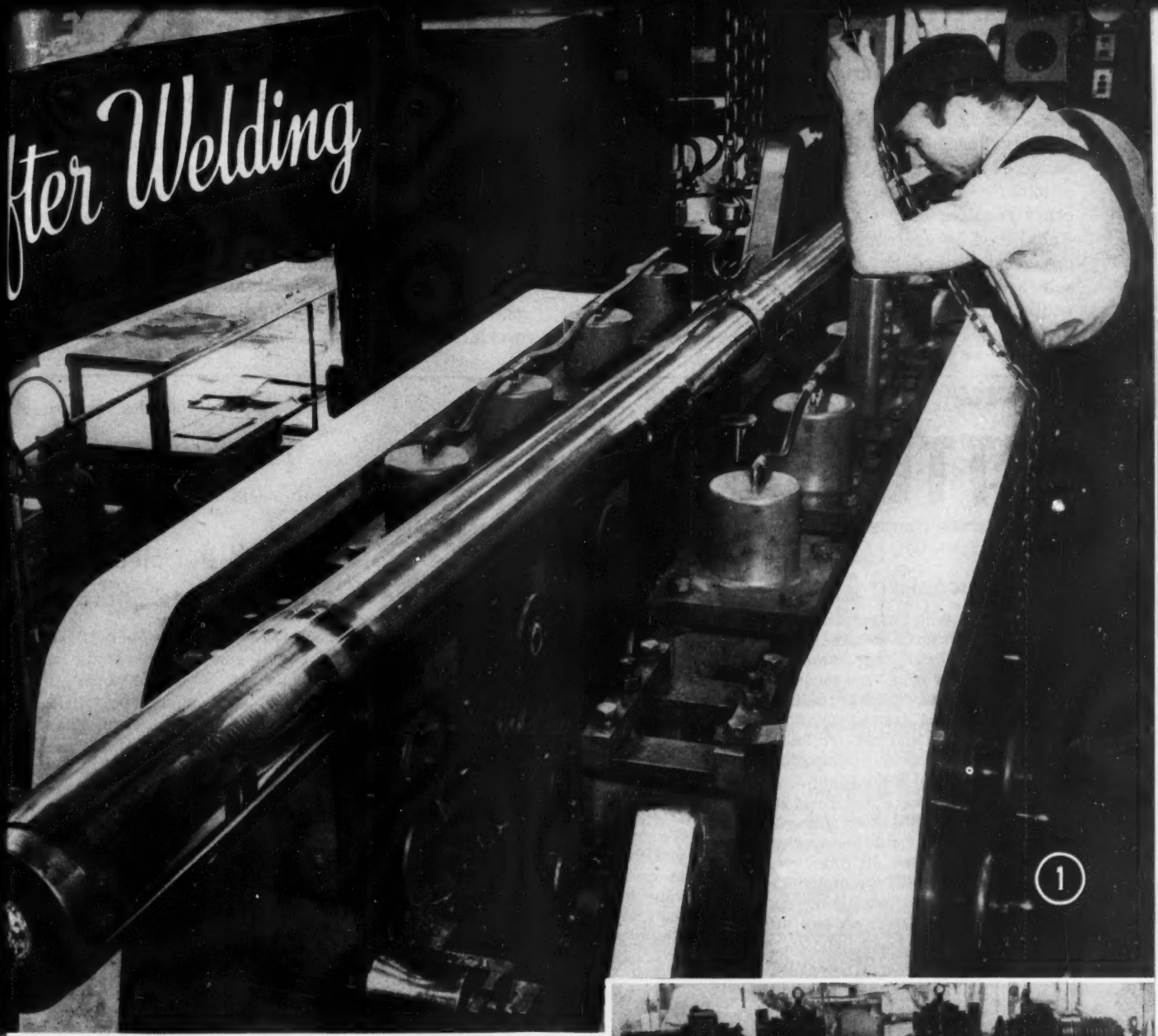
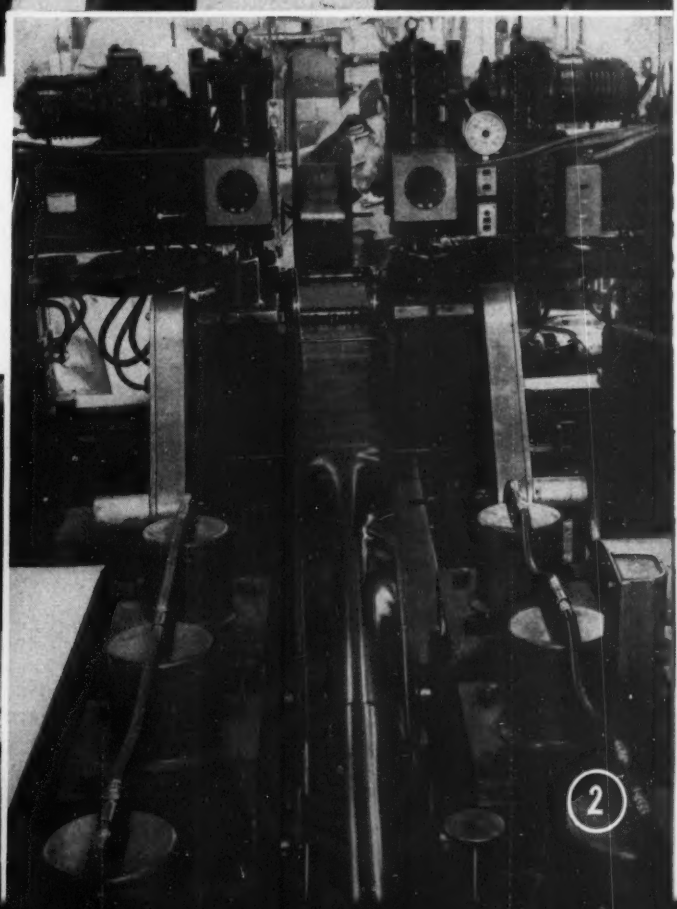
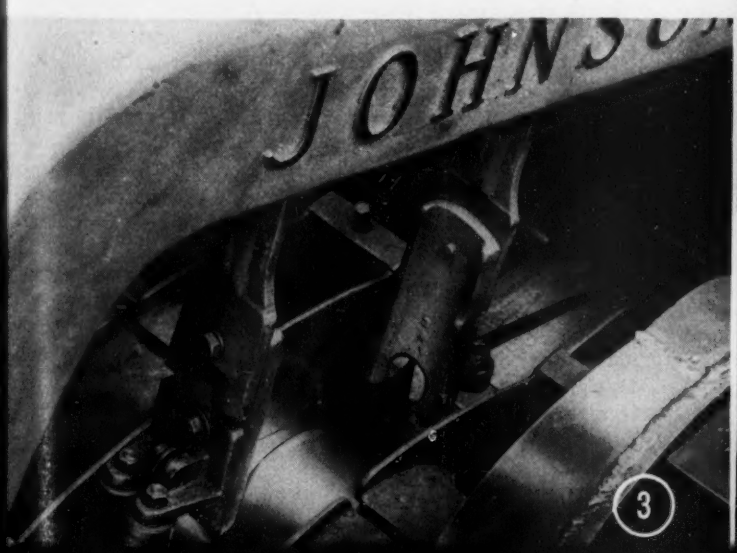


Fig. 1—Operator installing mandrel for 6-inch tubing. Mandrel is farther back toward welders than its normal operating position

Fig. 2—Major portion of tube mill showing transition of material from a flat steel envelope to round tube. Welders and coil feed are shown in background

Fig. 3—Band saw which is mounted on a traveling carriage moves along with tubing while making cut





galvanized and submitted to a hydro test at predetermined pressures ranging from 80 to 300 pounds per square inch. Rejects are rare.

Many Possibilities—Process is adaptable to a wide range of sizes and gages. Its operation is completely automatic. Change-over from one diameter to another requires only 60 minutes shutdown and is accomplished by operator and one helper. Only changes not accomplished by adjustments in the machine itself are cleaning mandrel and substituting proper width coil. There is complete flexibility as to length.

Any metal that can be resistance welded can be fabricated on this continuous tube mill which is adaptable to varied cross sections such as square, oval, or irregular. The company believes that economy of the tubing on a footage basis will result in a wide variety of other applications. Instead of the long period of adjustments, experiments, and changes normally expected when a new machine is put into operation for the first time, tube mill produced round, straight lengths of tubing from its first day of operation. Operator runs machine by himself, merely checking such items as lubrication of material and welder adjustments.

LETTERS *to the Editors...*

Wage Incentive Plan

We are contemplating installing, if practical, a wage incentive plan in our steel fabricating department and we are endeavoring to secure the names of some good, capable industrial engineers or engineering firms that have experience and are qualified to formulate and install a wage incentive plan for steel fabrication.

We do not fabricate structural steel. We are only interested in a wage incentive plan that would be applicable to the construction of code vessels such as used for storage and refinery and chemical plant processing equipment. If you can furnish any information that would be of help to us in this matter, we will be very grateful.

C. N. Wibker, Vice President
J. B. Beaird Co. Inc.
Shreveport, La.

One approach would be retaining a firm of industrial engineers that has had experience in the field, such as Trundle Engineering Co., 1501 Euclid Ave., Cleveland, O. Another approach would be to retain someone from the staff of an engineering school to act as consultant in setting up your program. Purdue University or Carnegie Institute of Technology would be possible choices. It is possible that they could recommend capable industrial engineering companies.—The Editors.

Public Law 413

Your issue of STEEL, April 19, 1948, contains an article entitled "How Law 413 Streamlines Buying for Military Requirements," on page 69. I would appreciate further information on this subject: How to procure a copy of the "Armed Services Procurement Act of 1947;" in what publication the advertisement for bids is done.

J. Robert Roulston
Exacto Machine & Tool Works
Palisades Park, N. J.

A copy of Public Law 413 is being forwarded. With respect to your question in what publication the advertisement for bids is done, our Washington editor advises that the Navy cannot answer this question satisfactorily. It seems regional offices handle advertising in the various areas. The only publication that tries to cover all items which the Navy seeks is the Government Advertiser, published in Washington. The nearest Navy Purchasing Office will arrange to have your name put on the list of all such products as you make so that when the Navy comes into the market for such products, they will send a request for bids.—The Editors.

New Tin Plate Mills

We noticed in the current issue of STEEL that some manufacturer was advertising that he would have a new sheet mill for tin plate in production very soon.

We would very much appreciate it if you could furnish us with available data as to how many new mills are coming in or how many old mills are expanding their production of tin plate; what amounts this new production or expansion will be and what per cent of the total this would increase the national production. We would like to have this information for a period up to and including December 31, 1949.

W. F. Edwards, Vice President
Pasco Packing Co.
Dade City, Fla.

A copy of the December 8, 1947 issue of STEEL is being sent. It lists, on page 66, all of the new rolling mills recently completed or under construction.—The Editors.

Ten Times Too Much

On page 110 of May 3, 1948 issue of STEEL under the title "Scrap is Sunk," Mr. Walter Siegerist, president, Medart Co., writes that our Navy scuttled a 300,000 ton battleship during tests in the Pacific. I agree with Mr. Siegerist that this act resulted in a regrettable loss of much needed scrap metals, but I cannot believe that the battleship weighed anyway near 300,000 tons.

To the best of my knowledge, our largest battleship weighs less than 50,000 tons. Only recently, the Navy announced plans for building the world's largest ship which is to weigh less than 100,000 tons.

Will you please refer this subject to the proper authorities for further discussion.

B. J. Keffler
Republic Steel Corp.
Massillon, O.

It is quite possible that Mr. Siegerist erred. He probably meant 30,000 tons.—The Editors.

Liquefied Petroleum Fuel System Solves Shortage

Successful installation of liquefied petroleum gas equipment was made last summer in three western Michigan industrial plants by Michigan Consolidated Gas Co., Grand Rapids, Mich., to relieve the current shortage of natural gas in that area. An automatic system for mixing the liquefied petroleum gas with air at a constant ratio was supplied by Brown Instrument Co., Philadelphia, enabling production to continue uninterrupted. Varying plant load conditions ranging from 3 to 100 per cent of capacity have required only occasional routine checkings of the system.

Basic operating principle of the system is that equal and fixed pressure differentials are separately maintained across the gas and air valves with variations in plant demand accommodated by openings of control valves. With constant differential pressures, flows through gas and air valves are proportional to valve openings. Variable orifice arrangement permits a much greater turndown range than could be obtained with use of fixed orifices and a conventional flow control system.

Auxiliary equipment includes a liquefied petroleum gas vaporizer heated by steam to provide the gas, a pressure regulator on the gas line to maintain a constant pressure upstream from the gas valve, and a check valve on air line to prevent back flow of gas when the air compressor is shut down. Small dial type, indicating pressure gages are installed on downstream side of control valves to provide a check on pressure and also an indication for emergency hand control.

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Continued Expansion Seen in Use of

POWER-DRIVEN PORTABLE TOOLS

ACCORDING to figures assembled in a study conducted recently by STEEL's market research department, there are well over a half million portable power-driven tools now in use in the metalworking industry. The six types selected for the particular survey include drills, grinders, saws, riveters, wrenches or nut runners and screw drivers. Choice of these particular types was based on their use as both production and maintenance tools.

Power screwdrivers, riveters and nut runners, for example, are primarily production line tools used in assembly work, while drills and grinders have an important maintenance use in addition to their employment as production tools. In the metalworking industry, portable saws are primarily maintenance tools, with a minor application in production.

Use of portable power tools is almost universal in the metalworking industry. Of 25,538 plants in the industry, this study indicates that 24,143 or 94.54 per cent use them. Table I is a breakdown by size according to employment.

Although there are many more small plants utilizing power tools, the total number of tools they employ is small in comparison to the total used by large plants. Largest market for these tools is among the larger plants. Actually, the totals show that more than 68 per cent of all portable power tools are used in plants employing more than 100 people, and over 80 per cent are used in plants employing more than 25.

Primary Metal Industries — 4022 out of 4135 plants classified in this group use portable power tools, or 97.27 per cent. They use 15.7 per cent of all portable tools, in such establishments as foundries, forge shops, steel mills and nonferrous metal smelters and rollers.

Fabricated Metal Products Producers — 10,262 out of 11,087 plants classified in this industry group use portable power tools, or 92.56 per cent. They use 34.62 per cent of all tools in establishments making such items as cutlery, containers, heating and plumbing equipment, metal furniture, light metal specialties, structural and plate products, sheet, strip, bar and wire products, and lighting fixtures.

Machinery Manufacturers — 10,463 out of 10,733 plants in this classification use portable power tools, or 97.48 per cent. They use 42.65 per cent of all the tools in the manufacture of such items as engines, tractors, agricultural and industrial equipment, processing machinery, office and store machines, household machines, special industry machinery and machine tools.

Electrical Equipment — 1612 out of 1719 plants which manufacture electrical machinery and equipment use power tools, or 93.78 per cent. They use 9.27 per cent of all the tools in the manufacture of domestic and industrial electrical equipment, communications equipment, electrical products for the transportation industry, and similar devices.

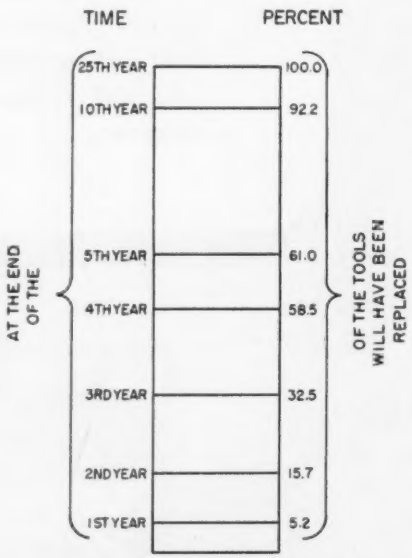

Chart showing how long tools last in the metalworking industry, as revealed by this survey. Representing all tools in use at the present time, the sections show the percentage which will go out of service at the end of certain periods

Transportation Equipment — 2013 out of 2068 plants in this industry use portable power tools, or 97.34 per cent. They use 19.03 per cent of all the tools in the manufacture of motor vehicles and parts, aircraft and parts, railroad equipment, ships, motorcycles, and bicycles.

Instruments — 823 out of 881 plants in the instrument field use portable power tools, or 93.42 per cent. They use 1.67 per cent of all the tools in the manufacture of medical, surgical, dental, scientific and industrial instruments and devices.

Distribution of Portable Power Tools — Because most tools in the classification under surveillance are stock items, a large part of the sales volume is handled through jobbers. More than 74 per cent of the plants buy through distributors only, but they buy less than half the total number of tools. About 11 per cent of the plants buy direct from manufacturers, and they account for 20 per cent of all tool sales. The remaining 15 per cent of the plants buy both direct and through jobbers, and they buy 32 per cent of all the tools. Details of the pattern of distribution on individual tools are shown in Table II.

Service Life — Because the length of service has an important bearing on the replacement market, an effort has been made in this study to find out just how long tools last in the metalworking industry. The accompanying chart shows the findings. Representing all tools in use at the present time, the sections show the percentage which will go out of service at the end of certain periods. For example, 5.2 per cent of all tools have a life of one year or less, while 61 per cent last less than 5 years. Over 90 per cent are out of service at the end of the 10th year, and no respond-

TABLE I

SIZE OF PLANT	PER CENT OF PLANTS USING POWER TOOLS	PLANTS IN THIS GROUP	INDICATED NUMBER OF PLANTS USING POWER TOOLS
Plants Emp. Over 500	100 %	1819	1819
Plants Emp. 100-500	96.45%	5543	5346
Plants Emp. 25-100	96.39%	8930	8608
Plants Emp. Under 25	90.53%	9246	8370*

* This does not take into consideration the 15 to 20 thousand small metalworking establishments which employ fewer than 4 workers. In total they account for less than 2% of the industry's production volume.

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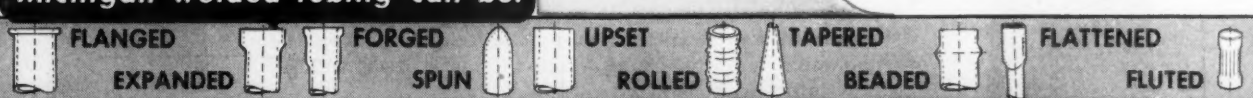

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ent reported a tool life beyond 25 years. Presumably the longer-lived tools are used for maintenance and not for continuous duty.

Future Use — Through the use of a simple question as to whether the plants covered by the survey expected to use more, less, or about the same number of tools under discussion, a future use trend was established which shows a definite market expansion ahead. More than 28 per cent of the plants indicated they expect to increase the number of tools in use, while only 1.68 per cent showed a decrease.

The remainder expect continued use at about the present level. An analysis of the returns on a size of plant basis shows little variation in the pattern from the figures for all plants, indicating that the market is probably expanding at about the same rate in the small plants as well as the large. Since the study covers only existing operations, it does not take into consideration the market arising from new plants entering the field, a factor whch would tend to expand the 28 per cent figure to a slightly higher level.

TABLE II

Type of Tool	JOBBERS ONLY Per Cent of Plants Buying	JOBBERS ONLY Per Cent of Tools Bought	DIRECT ONLY Per Cent of Plants Buying	DIRECT ONLY Per Cent of Tools Bought	BOTH METHODS Per Cent of Plants Buying	BOTH METHODS Per Cent of Tools Bought
DRILLS	75.4	51.0	9.1	16.4	15.4	32.6
WRENCHES	61.8	40.1	13.4	26.1	24.8	33.8
SCREWDRIVERS	72.3	48.3	9.3	18.0	18.4	33.7
GRINDERS	72.9	56.9	10.9	16.2	16.2	26.9
RIVETERS	60.9	39.6	15.2	24.5	23.9	35.9
SAWS	72.0	58.1	9.3	11.5	18.7	30.4
ALL OTHER	55.9	19.2	18.9	47.8	25.2	33.0
TOTAL	74.1	47.9	10.9	20.2	14.9	31.8

Sample of 1926 plants used in this study was carefully balanced, using employment and products manufactured as the principal bases, with additional checks on geographical distribution and metalworking operations performed. Returns came back in almost exact proportion through all the various groups involved.

No attempt was made to classify the tools used on a basis of the power involved. Some of the tools are almost exclusively powered by air, as in the case of riveters, while others are predominately electrically operated, as in the case of saws. Where a choice of power is available, factors other than the ones being considered in this study usually determine the selection, and therefore the type of power probably has little bearing on the market for such tools.

Among the other types of tools mentioned on the returns, hammers of several types were the most prominent. Sand rammers, metal shears and squeezers received several mentions, and other tools noted were paving breakers, sanders and files.

High Temperature

CERAMIC COATINGS FOR STEEL

Offer Many Potential Industrial Uses

CERAMIC coatings for high temperature protection of mild steels were developed as a result of research by National Bureau of Standards, Washington, to overcome nickel and chromium shortages that appeared imminent in wartime. Laboratory and service tests show that these coatings possess characteristics for high temperature applications and have many potential industrial uses.

Type No. A-19 has been found successful on baffle plates of continuous furnaces and on inner cylinders of burner jackets for domestic kerosene stoves with potential applications including: Parts for heat interchangers for turbine engines, annealing boxes, and mufflers and tail pipes for buses, trucks and automobiles. Shown in the accompanying illustration are two steel exhaust stacks which were used simultaneously on a navy patrol bomber for 300 hours. Conventional coating of the stack on the right developed fine blisters and flaked off locally while the stack with new coating showed no effect.

Temperatures at which protection is being sought are limited only by melting or softening points of alloys or metals being protected. If sufficient insulation can be provided by the coating, it may be possible to use coated metals at gas temperatures substantially exceeding the maximum temperature at which the metal itself will retain sufficient strength.

Outstanding features of the new coatings include: High resistance to chipping under repeated severe thermal shock, protection of metal against oxidation during prolonged exposure in air at temperatures up to about 1250° F, freedom from cracking and blistering produced in conventional porcelain enamels under comparable conditions of high temperatures and severe thermal gradients, and a mat surface that does not show highlights.

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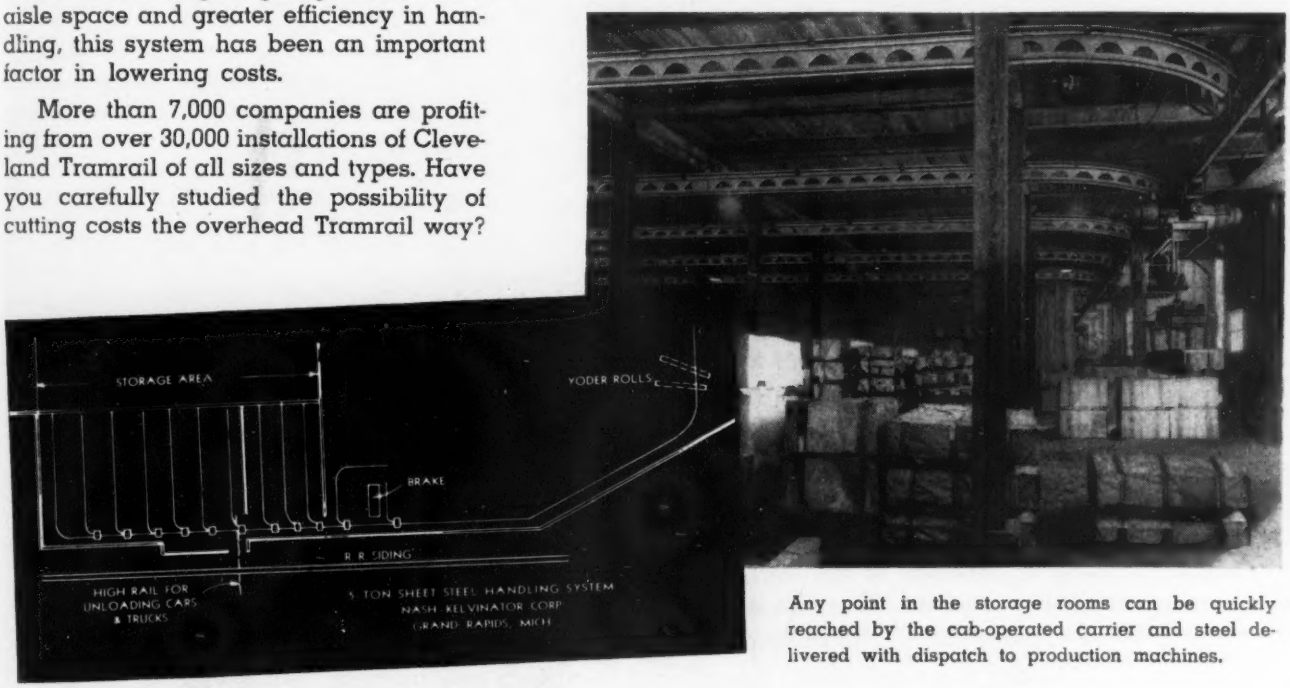

Any point in the storage rooms can be quickly reached by the cab-operated carrier and steel delivered with dispatch to production machines.

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CLEVELAND TRAMRAIL
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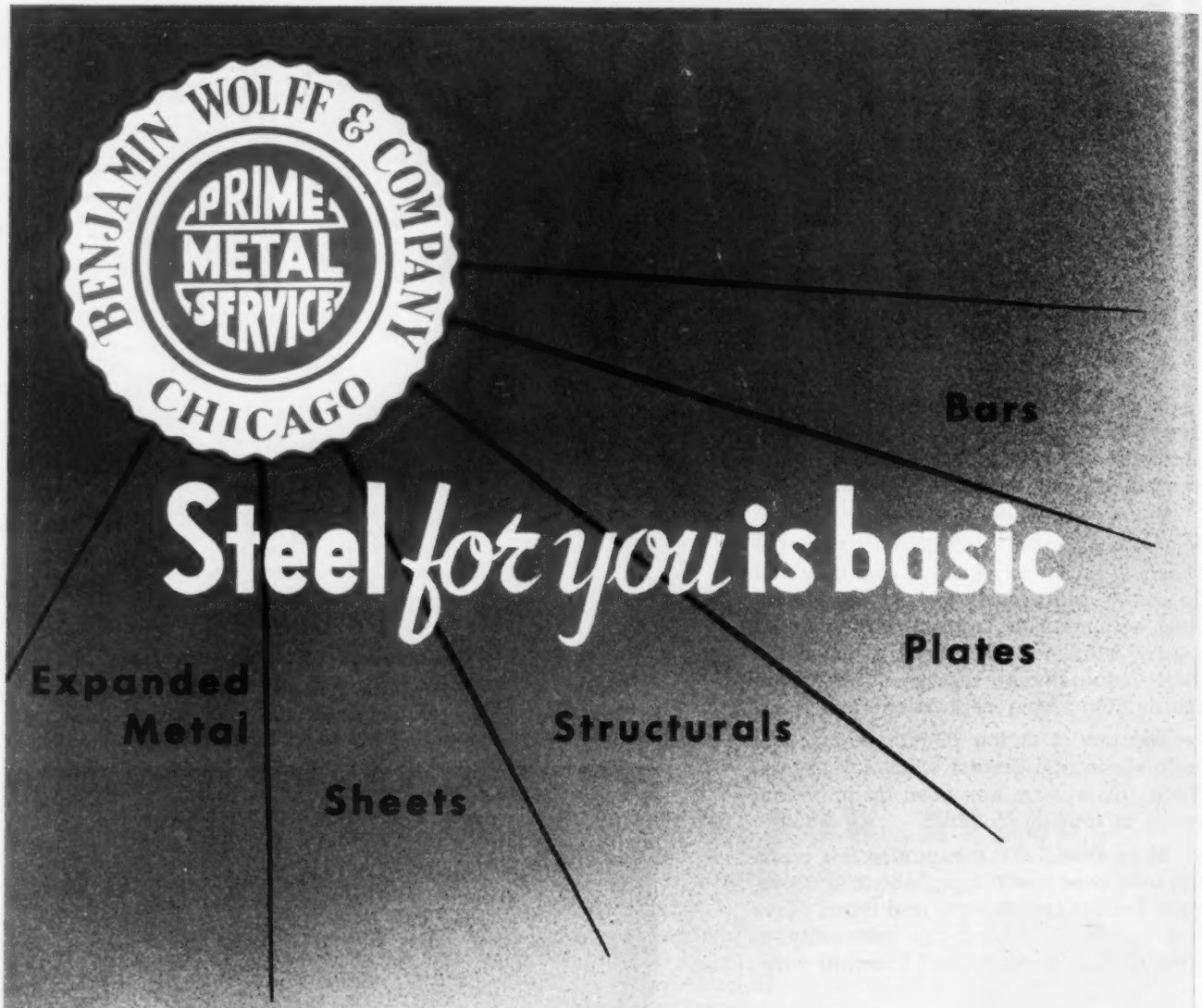

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Residual Stress and Dimensional Changes

. . . caused by welding and other local heating processes

WELDING, torch cutting, and other thermal processes can markedly change the length, width, thickness, hardness, tensile strength, yield point, microstructure and state or stress of base metal, stated Leon C. Bibber, Welding Engineer, Carnegie-Illinois Steel Corp., Pittsburgh, at a recent meeting of American Society of Civil Engineers in Pittsburgh. These effects and their causes, if properly understood, can not only be controlled but can be of great service to the engineer.

Lengthwise shortening as a result of complete heating of structural members is known to those who are directly involved in the hot forming of plates and shapes. It is probably not widely known outside of that small circle because heating and forming are the first operations done and parts are laid off after shortening has taken place.

An example of differential cooling is found in rolled shapes in which not all the elements are able to cool identically. In I beams the thicker flange sections complete their cooling after the thinner webs and legs have cooled and strengthened to a greater degree. This is manifested in a balanced stress (tension and compression) between the webs and flanges of rolled sections. Furthermore, if there should be a difference in cooling of one flange from that of the other, the beam would not be straight when cold and must be straightened.

Use of Heat in Fabrication

By far the greater use of heat in fabrication is in local rather than general heating, Bibber stated. In the case of local heating, resistance of surrounding metal to the local expansion enters into the problem. Local heating of metal with an acetylene torch to a point above the critical range will cause the softer heated metal to flow and upset.

Heating metal to a point slightly below the upper critical temperature causes the heated place to tend to contract and is manifested as a depression. During the cooling cycle, expansion in the critical range will fill up the depression and contraction below that range will proceed almost as if no transformation had occurred. If the spot is heated to a temperature below the critical range, less expansion and less thickening should occur.

Spot heating is used to correct the warpage resulting from welding in bulkheads of ships and in the side plating of cars and vehicles. Sometimes the shrinkage effect is augmented by pounding around the spot to expedite flow of metal into spot and increase its desire to upset. In practice heating is not carried up to the critical range because to do so would increase expense and cause unsightly scaling.

Restrained contraction is also useful for shortening and straightening of members. For example, a bent I beam can be readily straightened by keeping the heat wholly on the half that is to be shortened. Oftentimes angular movements of 10 or 15 degrees can be produced with one such application.

Maximum residual stress in completed welded joints is in the longitudinal direction if the plates are relatively free to move during welding. If, however, these plates are prevented from moving toward each other by external restraint, very dangerous transverse stresses can result. Cracking of earlier beads of weld metal can occur and if that condition is not observed by the welder, subsequent beads of welding may be deposited over the crack. Under the shrinkage stress of the cooling weld metal, the crack may progress further into the weld. Two practical remedies for this situation are: 1. Prohibit welding of joints unless at least one member is free to move however difficult it may be to arrange in a complicated structure and 2. refrain from permitting a joint to cool until the welding has been completed.

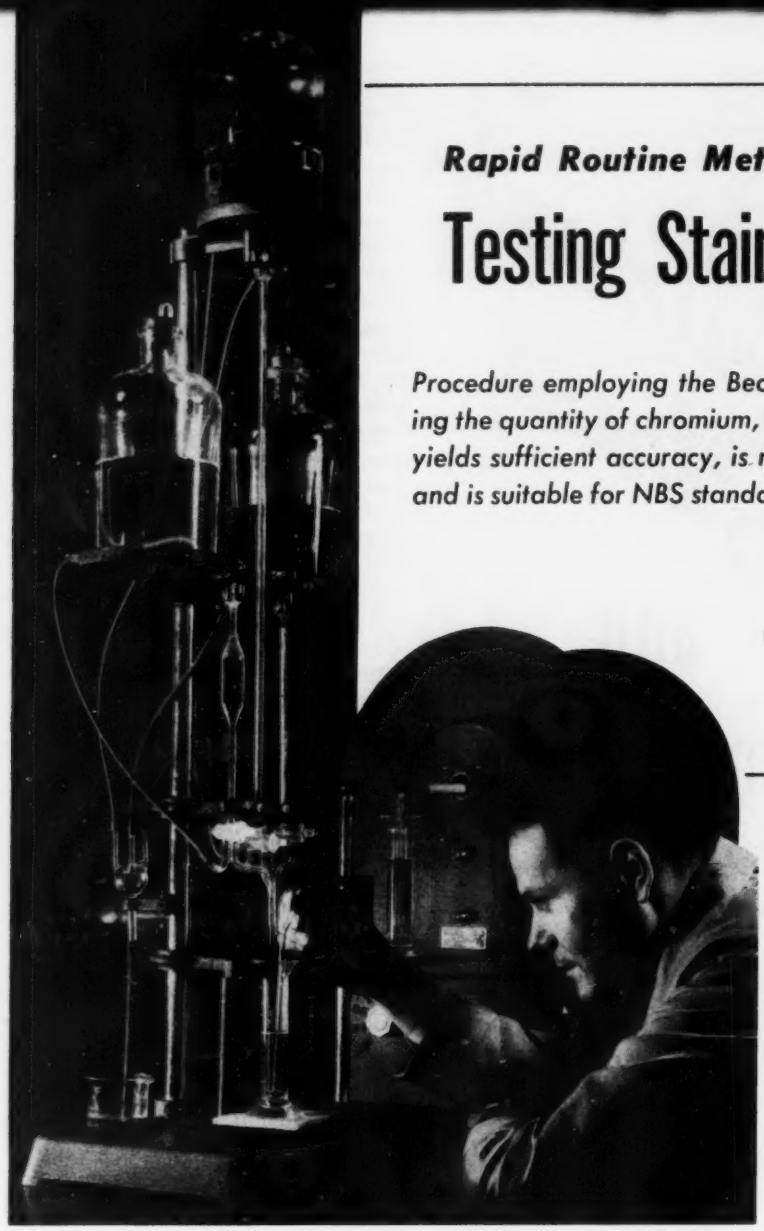
The big question raised by the previous discussion is whether or not local residual stresses are dangerous. Since local plastic flow dissipates localized stress, failure to obtain a certain degree of local plastic flow under certain conditions can cause a critical situation.

In every case of failure in a welded structure a stress raiser, usually a notch, has been present. Notches can exist in a structure as a result of design or workmanship. Control of this dangerous stress raiser is wholly within the hand of the fabricator.

Stress Relief Annealing

Stress-relief annealing is the process of lowering the residual stress level by heating the structure in a furnace to a temperature below the lower critical point and then allowing the weldment to cool slowly in the furnace. Heating lowers the yield strength of the structure and allows plastic flow to take place. The slow cooling which follows the completed heating is a very important part of the process. Parts of moderate size are usually kept in the furnace while it cools, but large structures require controlled cooling which sometimes takes several days. As a result of stress-relief annealing residual stresses in the part are minimized, and a considerable degree of tempering is obtained whereby ductility of the structure is increased.

Preheating is not necessary for welding normal structural steel since resulting hardness attains a nominal value and no harm results. However, if the base material being welded is of high hardenability and of considerable carbon, martensitic hardening could result in cracking. Cracks known as underbead cracks occur in base metal, and are due to the fact that stress is present and that the quenched metal is incapable of flowing to relieve the stress. Preheat temperatures necessary vary with the purpose, and so a means of measuring temperature involved must be provided to avoid getting an improperly low temperature or wasting costly gases in obtaining unnecessary temperatures.



Rapid Routine Method for

Testing Stainless Steels

Procedure employing the Beckman spectrophotometer for determining the quantity of chromium, nickel and manganese in stainless steels yields sufficient accuracy, is more rapid than conventional methods, and is suitable for NBS standard steels and common types of stainless

By J. B. CULBERTSON and
R. M. FOWLER
Union Carbide and Carbon Research Laboratories, Inc.
New York, N. Y.

VARIOUS colorimetric and spectrophotometric methods are employed for the determination of chromium nickel and manganese in steel[1]. However, most investigators confine themselves to low-alloy steels, or their methods are too elaborate and time consuming for general use. This was found to be the case in a search for rapid routine methods for chromium, nickel and manganese to use in testing a large number of stainless steels for compliance with standard specifications. Methods in the available literature were not satisfactory and so a procedure was developed whereby chromium, nickel, and manganese are determined on aliquots of the same solution. It may be well to review separately the colorimetric methods for these elements before describing the procedure.

Stainless steels are so readily soluble in $HClO_4$, or mixtures of $HClO_4$ and H_3PO_4, that most investigators, since the publication of G. F. Smith's paper[2] on the use of $HClO_4$ in the determination of chromium, have employed mixtures of these two acids for the initial decomposition of the alloy. It has been found necessary to add sufficient HF to decompose the carbides and convert any columbium present to a soluble fluoride complex. Oxidation of chromium to chromic acid with $HClO_4$ is so simple and so rapid that it is becoming the preferred method for oxidizing chromium in routine work. Unfortunately, this reaction tends to give slightly low results, probably due to volatilization of some of the chromium as $CrOCl_2$ or to the formation of per compounds from the decomposition of the $HClO_4$. So all investigators recommend rapid cooling of the $HClO_4$ solution after the chromium is oxidized. Smith cools by immersing the flask in ice water for a few seconds. This is hard on the flask unless Vycor is used. We have found that H_3PO_4 (1 to 1) can be used to rapidly cool the boiling $HClO_4$ and inhibit reduction of the chromium. However, when H_3PO_4 is added in this way, some of the manganese in the steel is oxidized to $HMnO_4$. Since this would require a correction in the chromium determination, this manganese is reduced by next adding H_2O containing a small amount of HCl, and boiling. The quantity of HCl is sufficient to reduce this oxidized manganese but insufficient to interfere in the subsequent determination of manganese.

Oxidation of nickel dimethylglyoxime to $Ni(C_4H_7O_2N_2)_2O$ and a colorimetric determination based on this reaction have been known for 20 years. This reaction was applied to 15 per cent nickel steel by Dietrich and Schmitt[3], and later studied by Murray and Ashley[4] and Makepeace and Craft[5]. All these investigators used bromine to oxidize the nickel complex in an ammoniacal citrate or tartrate solution. Various modifications and suggestions of oxidizing agents have been made. From these investigators' papers and our experience with their methods, it is concluded that trouble due to fading of the red nickel color was the reason that this method was not widely used. Many oxidizing agents and pH ranges were tried to improved stability of the color. It was found that a composite solution containing tartaric acid, sodium hydroxide, and ammoniacal dimethylglyoxime could be used and the nickel in this solution oxidized with KIO_4 rapidly and completely to a color stable for at least 24 hours. Under these conditions, substantial amounts of cobalt and copper do not interfere with the nickel determination. Thus, to the nickel aliquot of

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TABLE I—RESULTS FOR CHROMIUM OBTAINED BY THE NEW PROCEDURE

Std. No.	No. of Results	Average Result	Average Deviation	σ	Certificate	Av. Dev. Cert. value	Max. Dev. Cert. value
101b	11	18.38	0.055	0.064	18.49	0.11	0.20
101c	5	18.16	0.012	0.014	18.20	0.04	0.06
121	6	17.71	0.038	0.042	17.83	0.12	0.18
121A	17	18.76	0.07	0.082	18.69	0.08	0.20
123	2	17.68	0.08	....	17.67	0.08	0.08
Total	41			Average 0.051			

the master solution the analyst adds only two solutions and develops the stable nickel color. Reference to this use of KIO_4 is difficult to locate although Kolthoff[4] suggested its use in a dimethylglyoxime method for copper at a lower pH. At the higher pH the copper compound is apparently unstable.

It has been interesting to observe the increasing popularity of the KIO_4 colorimetric method for manganese as more chemists appreciated the pioneering work of Willard and Greathouse[7] on this reaction, and better colorimetric apparatus became available. The method is ideal for use on cobalt steels, it being much faster than any other method for the amounts of manganese usually encountered in stainless steels because the chromium does not have to be separated. The authors have not modified the method of Willard and Greathouse as applied to steels except in minor details such as increasing the boiling period to remove the HCl added to reduce the oxidized manganese before the chromium determination.

It might be well at this point to discuss a feature of the Beckman spectrophotometer which we think is not as widely used by chemists as it should be. If a transmission curve is set up against water as 100 per cent transmission, the amount of highly colored compounds that can be read on the Beckman scale is small. This requires weighing a small sample which is often undesirable, or dilution of the solution of a 1-gram sample to a large volume. However, when the approximate range of an element in a sample is known, if the Beckman is set up on a portion of a standard chosen to contain an amount of the element sought equal to the bottom of the range as 100 per cent transmission, then much darker solutions can be read because a wider slit width can be used. For example, most steels of the types under discussion have chromium contents between 15 and 21 per cent. Fractional weights of NBS steels can be chosen so that there is 15.00 per cent chromium in one and 21.00 per cent in another. Then if the Beckman is set to 100 per cent T on the 15 per cent standard, the 21 per cent standard will read approximately 27.6 per cent T. Since over this range the transmission of chromate solutions at the chosen wave length obeys Beers' law closely, these points are all that are needed to set up the curve of transmission vs per cent chromium, since an equation can be calculated for this straight line from the relation:

$$\frac{y - y_1}{x - x_1} = \frac{y_2 - y_1}{x_2 - x_1}$$

An equation for our Beckman calculated in this manner is as follows:

$$0.069485\ x + y - 3.04220 = 0$$

Where:

x = unknown percentage of chromium.
y = log of Beckman scale reading.

Alternatively, the transmissions of a series of standards can be measured against the 15 per cent chromium standard and a graph, alignment chart, or set of tabulated data columns for the curve prepared from the data so obtained. However, the first method is preferred. All of the foregoing applies equally well to nickel and manganese and similar procedures are used to set up these curves. The 100 per cent transmission standards should be prepared daily, but with this precaution: No change in the curves have been detected over several months. A standard has been run with each set of steels put through this procedure as an overall check, but the curves appear to be staying constant.

Basic Treatment—Detailed procedures are as follows (goggles must be worn while dissolving and diluting the hot solutions): Transfer 1 gram of the sample to a 750 milliliter Erlenmeyer flask containing 3 or 4 glass beads, add 30 milliliter of $HClO_4$ 70 per cent), 10 milliliter of H_3PO_4 (85 per cent), and 0.5 milliliter (10 drops) of HF (48 per cent). Heat to boiling and boil or fume gently until the sample is in solution. When solution appears to be complete and before chromium oxidation begins, add 20 milliliter of acid mixture (containing equal parts of concentrated H_2SO_4 and 70 per cent $HClO_4$) and continue heating strongly over a free flame until the chromium is completely oxidized. About 30 seconds fuming after the solution turns orange-red is usually sufficient to oxidize the chromium completely. Immediately grasp the flask with a pair of metal tongs, swirl the contents vigorously for about 10 seconds in such a way that centrifugal force causes the liquid to wash much of the sides of the flask, and cautiously pour 30 milliliter of H_3PO_4 (1 to 1) into the thickest layer of the swirling solution. If the chromium has been completely oxidized, after this phosphoric acid addition some of the manganese will oxidize to give a permanganate color in the flask.

Continue the vigorous swirling and cautiously direct a stream of water against the inside of the neck of the flask, adding about 5 milliliter in this way. Swirl until the violent bubbling ceases, then with continued slow swirling add 250 milliliter of water containing about 0.25 milliliter of concentrated HCl*, and swirl over a free flame until boiling begins. Boil for 5 minutes or longer if necessary to completely reduce any oxidized manganese. Cool to room temperature, dilute to 500 milliliter, and mix thoroughly. Use this master solution (S) for the determination of chromium, nickel, manganese, and molybdenum.

Chromium—Determine the transmittance on a portion of master solution in the Beckman spectrophotometer using the following adjustments and settings:

Wave length, millimeters	450
Photocell	Blue sensitive
Slit width, millimeter	0.13
Cell, centimeter	1

100 per cent T:—1 gram of 15 per cent chromium steel, or its equivalent obtained by taking a sufficient weight of NBS steel No. 101b processed by this method.

Convert the transmittance into chromium content by using a standard chromium calibration curve made as described previously.

Nickel—Solutions required are as follows:

I. Composite Solution

a. Tartaric Acid Solution (20 per cent—Dissolve 200 grams of tartaric acid in water and dilute to 1000 milliliter.

b. Sodium Hydroxide Solution (25 per cent)—Dissolve 250 grams of NaOH in 500 milliliter of cold water, cool, dilute to 1000 milliliter, and mix well.

c. Ammoniacal Dimethylglyoxime Solution (0.5 per cent)—Dissolve five grams of dimethylglyoxime in 1000 milliliter of concentrated NH_4OH.

d. Combine solutions *a* and *b*, shake well, cool to room temperature, add solution c and mix well. (If kept in a closed container, this composite solution is stable for at least two months.)

II. Potassium Periodate Solution

Dissolve 25 grams of KIO_4 in 4000

* If the sample is not to be used for the determination of manganese, the amount of HCl added may be increased; the time consumed in boiling to reduce oxidized manganese, will be shortened. Addition of 3 to 5 milliliters of concentrated HCl in the 250-milliliters of water will be reduced to permanganic acid in three minutes without having any detrimental effect on the determinations of chromium, nickel and molybdenum.

milliliter of distilled water. (Within a few days, this solution may turn somewhat yellow and may even form a light precipitate, but it gives good results for at least three months.)

Method—Transfer to a 100 milliliter volumetric flask an aliquot of the master solution containing 0.9 to 1.35 milligrams of nickel (usually a 5 milliliter aliquot), add 30 milliliter of the composite solution, and swirl until any precipitate formed during this addition has redissolved. (Occasionally when an aliquot greater than 5 milliliter is used, a precipitate forms that will not redissolve upon shaking. Additional composite solution will redissolve the precipitate without affecting the final color intensity.) Add 10 milliliter of the KIO_4 solution, and swirl. Let stand at least 5 minutes, dilute to 100 milliliter, mix well, and after 5 minutes read the transmittance in the Beckman spectrophotometer using the following settings:

Wave length, millimeters	522
Photocell	Blue sensitive
Slit width, millimeter	0.08
Cell, centimeter	1

100 per cent T:—1 gram of 9 per cent nickel steel, or its equivalent obtained by taking a sufficient weight of NBC steel No. 101b processed by this method.

Convert the transmittance into nickel content of the sample by using a standard nickel calibration curve made as previously described.

Manganese—Transfer a 250-milliliter aliquot of the master solution to a 400-milliliter beaker, add 1 gram of KIO_4, and boil for five minutes. Cool to room temperature, and dilute to 250 milliliter. Determine the transmittance of this solution in the Beckman spectrophotometer using the following adjustments and settings:

Wave length, millimeters	575
Photocell	Blue sensitive
Slit width, millimeter	0.04
Cell width, centimeter	1

100 per cent T:—1 gram of 1.28 per cent manganese steel processed by this method.

Convert the transmittance into manganese content of the sample by using a standard manganese calibration curve as previously described.

Results Obtained—In reporting on a method of this type no effort is made to present numerous tables of data on the variations to be obtained if one deviates from the suggested procedure. Instead, attention is directed to a performance chart of results obtained by three analysts on standard steels over a period of several months as an indication of the accuracy that may be expected. Each result for chromium in Table I was obtained on a different day and a number of standards have been used as 100 per cent T. These results were obtained over a period of several months, yet the maximum deviation that was found on any standard in 41 determinations was only 0.20 per cent chromium, while the average σ is 0.051 per cent chromium. This accuracy is sufficient where specifications call for a minimum of 17.5 per cent chromium. Samples falling within 0.2 per cent of the minimum are checked by the longer persulphate oxidation-potentiometric titration procedure.

TABLE II—NICKEL BY THE COLORIMETRIC PROCEDURE

101b	3	8.99	0.01	0.013	8.99	0.01	0.02
101c	3	9.22	0.06	0.06	9.25	0.05	0.08
121	4	9.00	0.05	0.066	9.04	0.05	0.15
121A	22	10.57	0.048	0.066	10.58	0.05	0.18
123	2	11.39	0.03	....	11.55	0.16	0.19
Total	34			Average 0.051			

TABLE III—MANGANESE BY THE COLORIMETRIC KIO_4 PROCEDURE

121A	4	1.28	....	....	1.28	0.01	0.02
Lab. Std.	5	1.51	....	....	1.51	0.01	0.02

Table II shows similar results for nickel. The maximum deviation from the certified value is 0.20 per cent nickel and the average σ is 0.051 per cent nickel which is also satisfactory for specification work since the average deviation between the carefully selected results of the ten analysts on NBS steel No. 121A is 0.024 per cent nickel while the average deviation in Table II is only twice that or 0.048 per cent nickel.

In Table III are shown a few results for manganese. Since there is only one NBS alloy steel with the manganese content usually found in present-day steels of the types being discussed, the amount of data presented is limited but the agreement is satisfactory for specification work.

In the case of Type 316 steels, the molybdenum can be determined on a suitable aliquot of the master solution. Since there is no NBS standard of this type, we will present no data on the $SnCl_2$-NaCNS-isopropyl ether method for molybdenum as this method is well known and the only time saved by using a portion of the master solution is that required to weigh and dissolve a separate sample.

The saving in time by the foregoing procedure is substantial. We will not attempt to set any absolute figure as it is obvious to anyone skilled in the art that it is faster than any other procedures available which yield results of comparable accuracy except spectrographic procedures. It has resulted in a 25 to 30 per cent saving in the time required for specification testing of stainless steels for carbon, manganese, nickel, chromium, and columbium.

To sum up, a procedure for the specification testing of stainless steels for chromium, nickel, and manganese using the Beckman spectrophotometer has been developed which yields sufficient accuracy for this type of work and is more rapid than conventional methods. The data presented show that this method gives satisfactory results on NBS standard steels and is suitable for all the common types of stainless steels.

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Appliance Finishes Developed for Industry

New line of industrial finishes, developed as protective coatings for household appliance products, was announced recently by Sherwin-Williams Co., Cleveland. Designated as Kemclad appliance finishes, they feature excellent opacity and build, economy of application, wide baking range, improved color stability and retention, greater resistance to fruit acids, good adhesion, durable and marproof surface and resistance to humidity and soap-water immersion.

System includes formulas for high-bake application on products such as refrigerators and washing machines, low bake applications such as cabinet work, cannisters, etc., and air-drying on products which are so finished. The finishing system will stand temperatures as high as 400°F for short periods.

—o—

Availability of a supplement reporting on the precision flowmeter method described in its standard for the determination of the flow rate of metal powder is announced by Metal Powder Association, New York. Supplement was prepared through cooperation of standards committee and 50 companies active in metal powder industry.

heavy oils facilitates separation. Water and some solids can be removed by this method. Heating may also break some emulsions formed in lubricating oil from water contaminants. However, gravity settling will not separate moisture absorbed in the oil nor will it remove oil soluble soaps, sludges, acids, etc.

Coagulation treatment is sometimes used to precipitate such oil soluble products by adding chemicals to the oil and heating. Upon standing, the contaminants are then dropped out as insoluble sludge. Such treatment, however, requires careful chemical handling and usually the supervision of a competent chemist. It is only used where large quantities of high quality oil are to be salvaged.

Filtration, employing various filtering media, such as cotton, paper, fine mesh metal, felt, clay, etc., is commonly known and used. Filters can be relied on to remove solids and most sludge. Some will also remove water and moisture (blotter paper type) as well as very fine particles. Such filters, as well as those using cotton, felt, cellulose, etc., are of the absorbent type. In addition to the filtration advantages mentioned, they usually are low in cost and have high sludge holding capacity.

The other two general types of filters used are the mechanical type and the adsorbent type. The former acts as a strainer to remove solids and oil insolubles. Layers of metal strip around a cylindrical core (Purolator), metal disks pressed together (Cuno), stacks of paper disks (Skinner), are typical constructional features of such mechanical edge type filters. Most edge type filters have low sludge holding capacity, although one manufacturer incorporates a self-cleaning feature.

Adsorbent type filters, using Fuller's earth or some other mineral adsorbent as the filter medium, remove not only suspended solids but also oil soluble oxidation products, resins, and acids. Such filters used in conjunction with oil heating elements to reclaim oil are efficient. However, adsorbent type filters may also remove desirable additives from additive type oils. Therefore, in selecting a filter or filtering system, care must be used to take into account the design of the machine being lubricated, the construction of the lubricating system, and whether straight mineral or additive type oils are used. The latter point is extremely important to filter selection.

Removing Detergent Additives—An investigation by the National Bureau of Standards on filtration of detergent type oils indicates that detergent or dispersive additives may be removed by the following mechanisms:

1. Direct adsorption of additive oil by filter
2. Removal by the filter of insolubles containing adsorbed additives
3. Removal by the filter of insolubles formed by thermal decomposition of the additive.

Additive removal is accelerated in any case by an increase in oil temperature during filtration.

Filters are generally used in one of two ways:

1. Full-flow service
2. By-pass service.

These terms are more or less self-explanatory. The full-flow filter acts more as a strainer to remove suspended contaminants rapidly. It must be of adequate size to permit sufficient oil flow as the filter becomes loaded. The by-pass filter, dependent upon size and by-pass flow, may provide for very efficient filtration. Flow rate should be as high as possible without depriving the machine of proper quantity of oil for lubrication.

Centrifuging is an old, well-known method of separating materials of different specific gravities, by mechanically accentuating the effect of gravity separation. Heavy contaminants, such as dirt and water, are quickly thrown out of an oil being centrifuged, and collect in an outer section of the machine where they may be continuously or intermittently discharged.

Centrifuging will remove all suspended solids, water, sludge, and soap. It will also separate some types of emulsions but will not remove oil soluble contaminants. The Sharples and De Laval are the most commonly used machines.

Magnetic separation of particles, chips, etc., of ferrous metals is sometimes employed, particularly in maintenance of engine lubricating oils while in service. Obviously this means of keeping oil clean is limited in that no effect is had on other than ferrous particles. It is used in conjunction with other filtering and recovery methods.

It will be apparent that for thorough reclamation of lubricating oils the previously described methods of contaminant removal and oil treatment are best used in combination. Such combinations are selected on the basis of operating requirements of the equipment, quantities of oil handled, and types of oil contaminants encountered in service.

Reclamation Systems—Several reclamation systems are possible. These are designated as:

1. Continuous by-pass
2. Continuous by-pass plus batch
3. Periodic batch
4. Complete batch—continuous

In the continuous by-pass method, a certain proportion of the oil from the system is continually passed to the reclamation equipment. This may consist of either filter or centrifuging apparatus or both. In some cases precipitation is also provided for in separate settling tanks. The oil from the lubricating sump is preferably taken from near the bottom of the system to pick up a maximum of contaminants. Volume taken off in the by-pass varies from 10 to 20 per cent. Rate of flow is dependent upon the type of reclaiming unit.

The continuous by-pass plus batch method is a combination of the foregoing with periodic batch treatment of the entire oil charge. The batch treatment in this case usually consists of settling, then filtering or centrifuging the separated oil and moving to storage or back in the oil system on machines.

Periodic batch method of reclamation is applicable to practically all large systems; engine, turbine, circulating oil, cutting oil, and heat treating oil systems.

Oil is usually first allowed to settle by gravity; coagulation treatment may be used to assist, and heat may be applied. The oil is then either filtered or centrifuged to restore its proper condition and to remove all contaminants.

Metal Chips Removed—In the case of cutting oil systems, the metal chips are also "extracted" to recover cutting oil which is subsequently reclaimed and reused. Oil laden chips are first heated to increase the fluidity of adhering oil. This oil drains from the chips into a catch tank. The chips are then centrifuged to recover the remaining oil on them. All this oil is then allowed to settle out solid particles after which it may be either filtered or centrifuged to clean it up further. This oil is then run to storage for subsequent mixing with new oil, and use in machine tools.

Soluble oil emulsions or coolants are not generally reclaimed. However, such emulsions, in grinding service particularly, are run through strainers and settling tanks to remove fine chips and abrasive grits which

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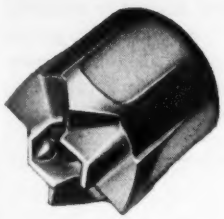
TOCCO unit heating bars for shearing slugs. Bars are heated to 1450°F at the rate of 36″ per minute. (Photo courtesy of Calumet and Hecla Co.)



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would otherwise be recirculated to the work and cause scratches on the machined or ground surface. Centrifuging and mechanical filtration of emulsions also serves the same purpose. After reasonable service in systems, emulsions are run to waste and replaced with freshly made supplies.

Heat treating oils, such as quenching and tempering oils are subject to a number of adverse contaminating factors in service. Dirt, dust, and scale from work find their way into the oil continually. The oil itself, whether quenching or tempering, is subject to severe deterioration from heat, either from heated steel being quenched or from heat applied to the oil itself (as in tempering). Oxidation products, sludge, etc., form at rates dependent upon temperature and steel production through the tank. Water cooling coils sometimes leak, too, which adds another harmful contaminant, water, to the oil.

If the system is small, the oil is periodically dumped, the system cleaned manually, and a new charge of oil put in. If the oil volume used is large, it is economical to reclaim, usually by batch methods of settling, centrifuging and filtering.

The last reclaiming method mentioned in the summary of such processes is the complete batch—continuous system, wherein the lubricating oil is used once and then completely reclaimed by batch methods.

Engine run-in oils, used on block test of engines, may be so treated in view of the type of service on the oil and extent of contaminants likely to be encountered in such service. The oil may be run from a tank through the engines on test and out to another tank where it is settled, centrifuged and perhaps filtered before return to the main clean oil supply tank.

Adsorbent Type Filter—It will be recalled that in discussing filtering efficiencies by various methods, the adsorbent type filter (especially active clay type) are efficient to extent of removing desirable additives as well as undesired oil soluble contaminants.

For some oils of the additive or compounded variety, adsorbent filters should not be used if the original characteristics of the oil are to be retained after reclaiming. However, where for other reasons the adsorbent filter is desired and must be used on additive type oils as well as straight mineral, some attention must be given to proper oil replenishment.

In the case of cutting oils, where some additive depletion is encountered through service and filter methods, it may be desired to add a new replenishing oil to the reclaimed oil which contains more compounding than the machining job itself calls for. The blend of reclaimed and new replenishing oil will then be more than suitable for reuse as cutting oil.

It should be remembered in this connection, however, that for many machining jobs, the cutting oil used may have a considerable margin of operating safety due to its formulation. Thus it can afford some additive depletion, as described, and still be right for the job when blended with original new oil. Cutting oils, if properly selected in the first place, are not generally subject to such critically narrow limits of usefulness.

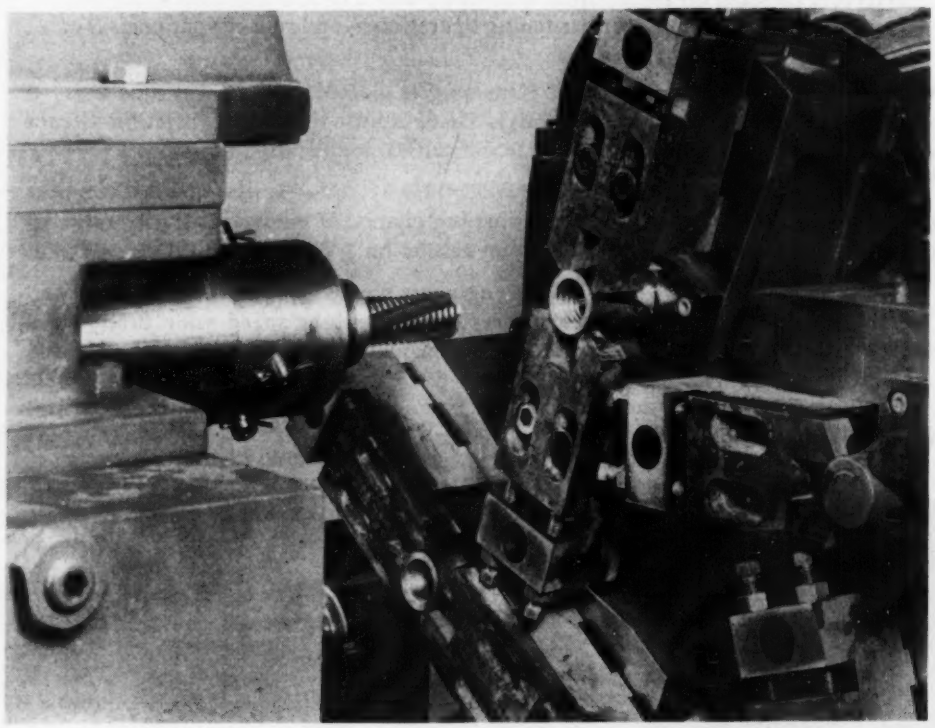
No mention has been made here of recovery, conditioning, or reclaiming of greases since this is not common practice. Greases, by virtue of composition and usage, are generally considered as one-trip travellers in the lubrication system.

From data presented by the author at General Motors Corp. maintenance symposium, Detroit, Feb. 12, 1948.

Standard Adopted for Rotary Files and Burs

Simplified practice recommendation for rotary files and burs has been approved and will be effective from June 15, 1948 according to an announcement by Bureau of Standards, Washington. The recommendation was proposed by Rotary File and Bur Institute, on behalf of a representative group of manufacturers of rotary files and burs.

Based on a study of consumer requirements, the recommendation establishes a simplified list of stock shapes, types and sizes for hand-cut rotary files and milled and ground from solid burs. It also lists number of teeth per inch, and gives a glossary of standard terminology.



IMPOSSIBLE JOB: Key operation in making tough steel rock-bits used for quarrying and mining operations is blind-hole tapping 6-pitch threads ranging from ⅞ to 1-inch inside diameter as performed by Timken Roller Bearing Co. in their Mount Vernon, O., plant. Spiral fluted taps produced specifically for this job by Detroit Tap and Tool Co., Detroit, get 15,000 rock-bits per tap although rough and finish drilling, facing, counterboring, and tapping are performed in a single pass on a 5-station machine

Texturized Metals—*Continued from Page 97*

sheet structures might profitably be replaced by structural Rigidized metal.

Computation shows, for instance, that with an average 1:30 ratio of truck-trailer road drag to weight, each pound of dead weight traveling (as it does on the average) 50,000 miles a year, requires about 0.6 gallon of gas a year or 14 cents per pound of dead weight a year as fuel cost alone. Adding as much again for the cost of oil, tires, additional engine capacity, axle and accessory capacity, plus added wear and counting on a 5-year useful service life, gives a figure of $1.40 as the premium an operator pays for dispensable weight. A 20 per cent weight saving delivered by texturized metal means then 28 cents per pound as mark-up added to the flat sheet cost per pound. Thus derives the following breakeven equation:

(Cost of flat sheet per pound + 28 cents = 80% × (Cost of flat sheet + cost of Rigidizing, per pound)

Limitations may be experienced in structural members where it is not possible to design assembly holes to correspond with the high and low spots. Where rectangular panels are to be used, flat edges can be specified, or edges may be pressed out flat in power brakes. For irregular shapes the solution may be the use of a duplex or sandwich with a flat plate following the contours of the finished piece and containing all assembly holes and passages and reinforced by a deep-pattern sheet, the two being joined or bonded by the Cycleweld process or by some such similar method. The reinforcing sheet is laid out to stay away from edges and fastening holes and to have a simple outline, often with the straight-line boundaries.

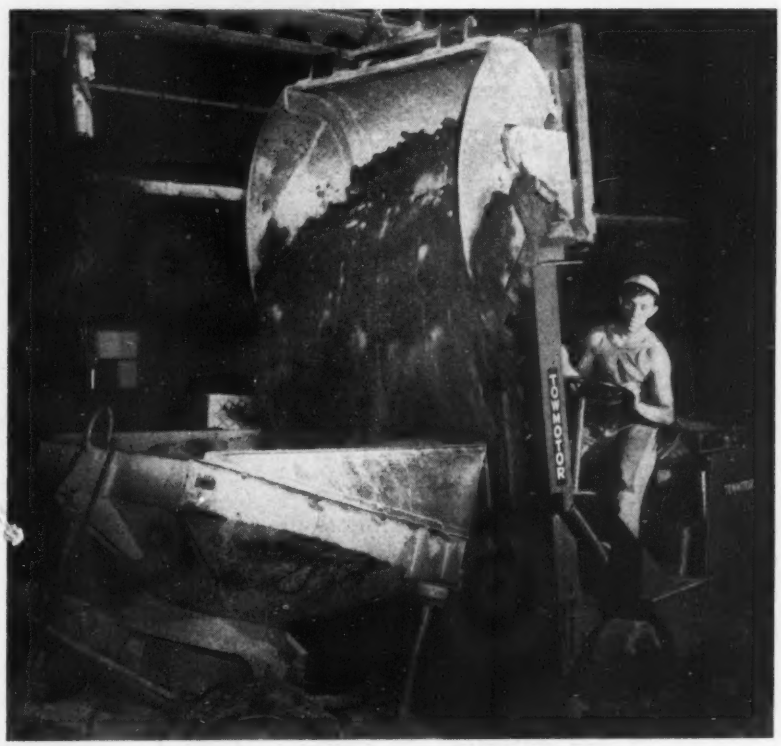
Limits have been determined on the lowest ductility at which a sheet can be patterned. This requires processing 24S aluminum alloy sheet in the annealed or 0 temper, or immediately after the heat treating quench. More ductile aluminum alloys, such as 52S, are rolled in the 0 or quarter-hard state and in the operation develop higher structural strength. Stainless steel sheet of the 18-8 type can be treated without difficulty, as is the case with mild steel and the low-alloy high-tensile steels. Magnesium alloys are processed hot.

Cutting-off of design-strengthened and textured sheets is done by shear or power saw. As the sheets nest into each other, multiple or stack saw cutting is practicable. Continuation joints may be of the lap or butt type, the latter with matched backplates. The natural nesting effect of the beads improves joint strength and simplifies hole layout. Riveting, spotwelding, stud welding, and bolting all are practicable, since structural patterns are usually provided with flat contact fields.

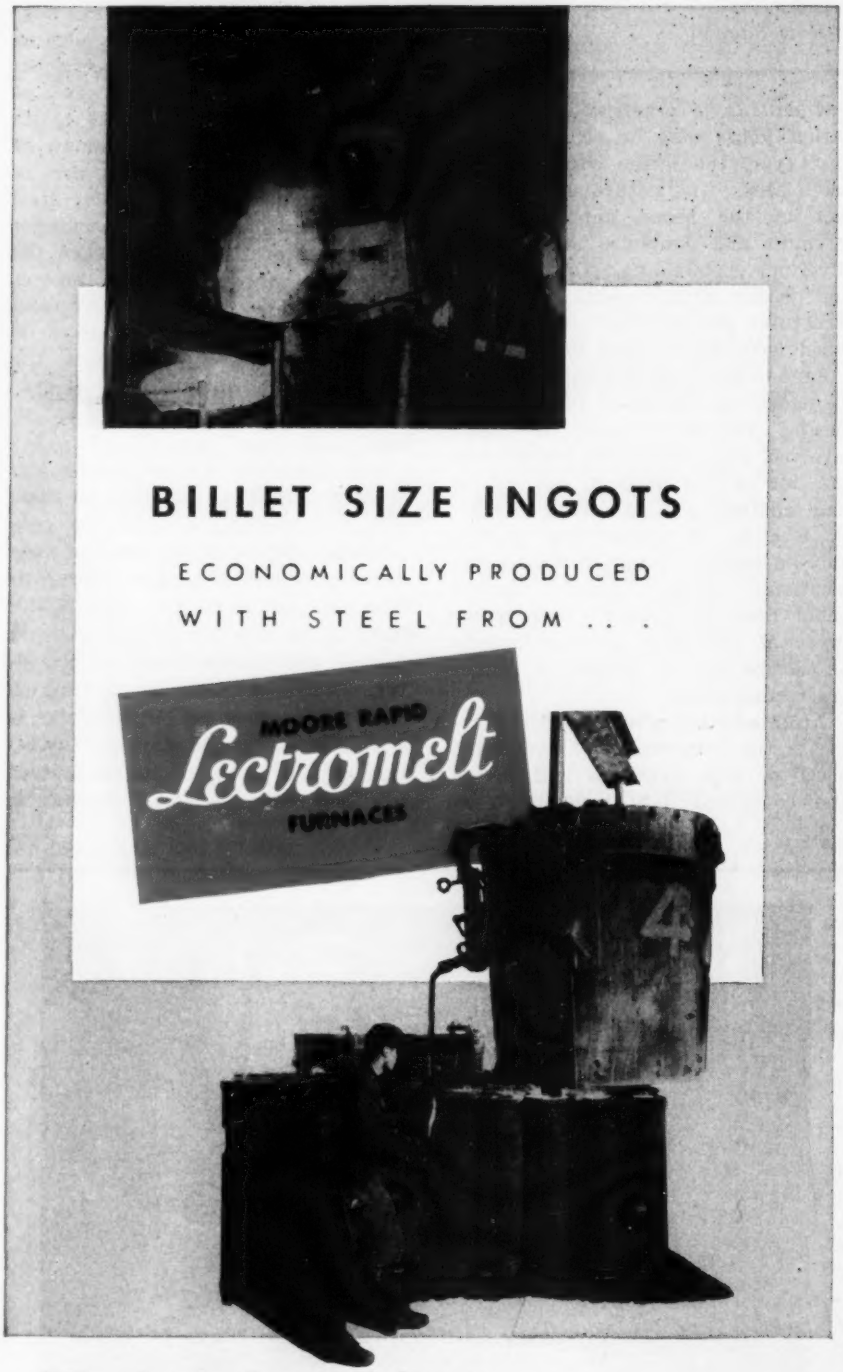
Face-to-face joints create composite panels by combining two or more sheets. Depending upon the shear involved, it is possible to fasten only one out of two or even one out of four contacting flats. This is done by riveting or spotwelding, preferably on multiple-head automatics. As mentioned before, panels bonded under heat and pressure with newer types of adhesives are particularly useful for duplex, triplex or higher order composites.

An interesting offshoot of the process is the texturizing of perforated metal or wire mesh. Weight saving and controlled light reflectivity, as well as increased strength, have suggested numerous applications such as radio grilles, ornamental screens, air grilles and lighting fixtures. One of the latest ideas in this field is its use in sun screens for windows of motor buses. The screens are of light-gage perforated stainless steel and are said to permit the passenger to see out of the window when the screen is drawn, yet to protect against sun glare and visibility from without. The stiffening pattern is sufficiently shallow to permit the screen to slide up into the bus ceiling in narrow channels when not in use.

The developer of the process has to date worked out 20 types of basic patterns, involving a variety of geometrical shapes, directional and nondirectional, repetitive and nonrepetitive, ranging in depth from 0.320-inch to as fine as 0.005-inch. A typical one is the so-called No. 6-WL, 0.040-inch deep. Its striking effect in breaking up light glare is shown in an accompanying illustration of two sheets of stainless steel, one with commercial polished finish



50 PER CENT LESS TIME: Picking up, transporting and dumping molding sand consumes this much less time in the Springfield, Mass., foundry of Westinghouse Electric Corp., now that two model LT-50 fork lift trucks with scoop accessory are in operation. Trucks, one of which is shown dumping sand into a screenerator, are made by Towmotor Corp., Cleveland, can also be used in general shop trucking using standard forks, in transporting and stacking loads of castings and occasionally handling ladles of molten metal



★ Top-charging Lectromelt furnaces make the production of billet size ingots economical. Sharply reduced down time cuts power and other operating costs, reflecting savings in the finished article.

And Lectromelt's efficient functioning doesn't require the purest of raw materials—a real advantage in these days of scarcities. Lectromelt furnaces are available in capacities ranging from 100 tons to 250 pounds. Write for full details today.

Manufactured in
ENGLAND
Birlec, Ltd., Birmingham
FRANCE
Stein et Roubaix, Paris
SPAIN
General Electrica Espanola, Bilbao
BELGIUM
S.A. Belge Stein et Roubaix, Bressoux-Liege

PITTSBURGH LECTROMELT FURNACE CORPORATION
Pittsburgh 30, Penna.

and the other carrying the rolled pattern. All of these basic configurations involve to a greater or lesser extent the previously cited factors of strength, appearance and utility. Automotive uses include kick and scuff plates, flooring, instrument panels, trim and molding, hubcaps, cab partitions, and seat backs.

Electrochemical Method Cleans Huge Castings

Electrochemical methods can be used for safe and economical cleaning of huge castings, stated J. A. Wettergreen of General Electric Co., Schenectady, N. Y., in a paper presented at American Foundrymen's Association meeting in Philadelphia on May 3-7. Lower shell of a turbine with a pouring weight of 43,000 pounds and a shipping weight of 18,000 pounds was successfully cleaned in a preheated tank which was charged with approximately 19,000 pounds of flake caustic soda and to which 11,000 additional pounds were added during the first 24 hours of the process.

Melting temperature of caustic soda was approximately 300° C, and no particular difficulty was encountered in melting. Temperature was later easily maintained at 400-450° C with no more than 10° C variation. Casting was preheated in an electric car bottom furnace to 400° C to eliminate moisture and prevent chilling the molten caustic bath before it was lowered into bath with a overhead traveling crane.

For the oxidizing cycle 2200 amperes were applied for 3 minutes. For the reducing cycle, polarity was reversed and cleaning was continued at 4000 amperes at 6 or 7 volts for about 2 hours. After observation of results, casting was cleaned again for 2½-hours. It was then allowed to drain, washed down with a fire hose, and checks were made with litmus paper and phenolphthalein for any caustic that might remain on the casting.

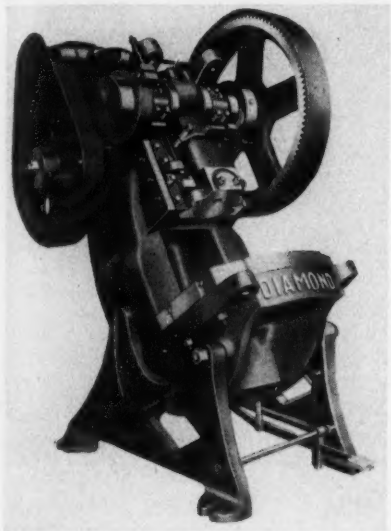
—o—

Approximately 1200 symbols used to designate components of German communications with each symbol identified according to conventional American designations are contained in a dictionary now available from Office of Technical Services, Department of Commerce, Washington. Dictionary contains symbols representing switches, relays, selectors, acoustic transmission apparatus, tubes, and equipment peculiar to telephony, radio, television and radar.

New Products and Equipment

Back Geared Punch Press

Designed to strain gage analysis, the 56-ton capacity back geared punch press, made by Diamond Machine Tool Co., Los Angeles, Calif., provides a slower stroke with heavy punching tonnage. The frame is cradle mounted and may be inclined



up to 35 degrees. The ratchet feed arrangement operates on thrust ball bearings by means of a square threaded screw.

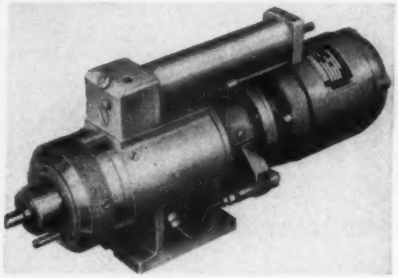
Press is equipped with a nonrepeat trip mechanism. Engagement of flywheel occurs in any one of three positions during a single revolution. A nickel-molybdenum steel clutch dog is fully supported within the thick crankshaft collar. Standard stroke is 3 inches and maximum stroke to order is 8 inches. Bed area is 21 x 30 inches. Press is capable of 50 strokes per minute.

Check No. 1 on Reply Card for more Details

Drilling Unit

Cleveland Republic Tool Corp., 1265 Union Commerce Bldg., Cleveland 14, O., is producing a drilling unit in two models for production drilling in any position, angle or plane. The air-hydraulically operated power unit can be used as a single unit or combined with several for simultaneous operations. Model 250 will drill up to ¼-inch in steel and model 500 up to ½-inch in steel.

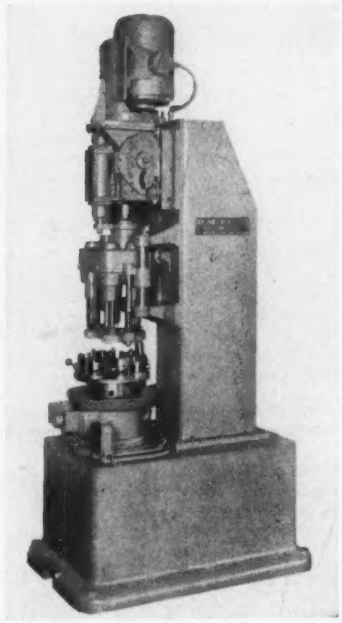
Other uses of the units are milling, riveting, chamfering, slot sawing and spot facing. Both units feature a rapid approach and variable feed which allows the tool to come within 0.001-inch of the work, at which point the work feed automatically cuts in. Each unit has a microscopic adjustment and lock screw to control depth of drilling, countersinking and chamfering to tolerances of less than 0.001-inch. Motor and operating mechanism are totally enclosed.



Check No. 2 on Reply Card for more Details

Indexing Machine

Operations such as drilling, counterboring, reaming and milling may be performed on the No. 3 vertical automatic indexing machine, designed by W. K. Millholland Machinery Co., 1048 Fairfield Ave., Indianapolis 5, Ind. Horizontal side heads may also be used for performing additional operations. Its power driven indexing table, mounted in large capacity antifriction bearings, is illustrated with 6 stations, although 3, 4, 8 and 12-station tables are available.

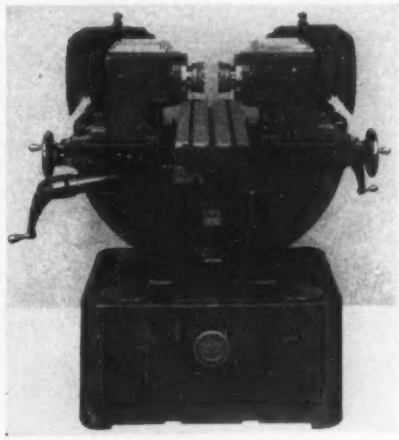


Machine shown has an automatic cam feed unit with 5 horsepower motor mounted in vertical position. The 15-spindle multiple head is mounted on guide bars and is equipped with bushing plate arranged to register on fixture at each index. High production machine is arranged for automatic continuous cycle or intermittent operation by pushbutton control. Machines are available in sizes up to 15 horsepower motor drive.

Check No. 3 on Reply Card for more Details

Double Spindle Miller

Two surfaces can be milled in a single pass on the double spindle, high precision twin miller, announced



by W. H. Nichols Co., Waltham 54, Mass. It has two opposed independently geared milling heads powered by pancake type motors and each has available 15 spindle speeds from 55 to 2080 revolutions per minute. Each head is adjustable in three planes: Horizontally; vertically; and transversely.

Maximum height of spindle centerline above table is 12 inches; minimum height is 1½-inches. Maximum and minimum distances between spindle noses are 16 and 4 inches, respectively. Wider flexibility is provided by vertical attachments which may be fitted to either spindle. The 8½ x 34-inch table is pneumatically powered by a solenoid-operated air cylinder. It travels a maximum of 12 inches, with a 9-inch hydraulically controlled cutting stroke.

Check No. 4 on Reply Card for more Details

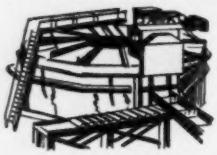
Sheet Metal Fabricator

Punching, notching, nibbling, bending, forming and blanking operations are performed by the new sheet metal fabricator announced by Wales-Strippit Corp., 345 Payne Ave., North Tonawanda, N. Y. Wales self-contained units form the nucleus of the machine and a self-contained holder, slidable on ways in the press bed,

GASMACO INDUSTRIAL FURNACES

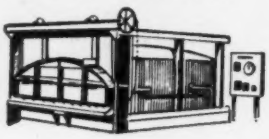
OIL or GAS FIRED for ALL TYPES of HEAT TREATING

DOUGHNUT ROTARY HEARTH FURNACES



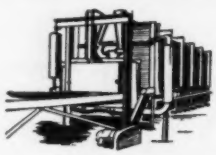
This particular furnace has baffle walls to shield controlled heating zones from high temperatures of the combustion zone, providing more accurate, uniform heating. Special insulation provides faster heating with minimum wall losses for fuel economy. Automatic charging and discharging machinery reduces labor requirements.

BOX TYPE FURNACES



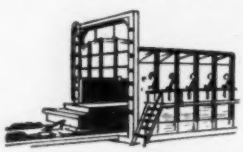
Built to specification for sintering, brazing, bright forging, annealing, hardening and draw. Designed to meet the increasing need for prepared atmospheres which will discharge material free from scale or surface decarburization. Furnished in continuous, semi-continuous or batch type for fuel fired furnaces.

RADIANT TUBE FIRED ROLLER HEARTH FURNACES



An exclusive feature of these furnaces is the Carbofrax* Tubes and Rollers which permit firing in excess of 2500° F, with fewer replacements. Complete control of the furnace atmosphere is provided. Annealing is accomplished without decarburization or scale in simple, inexpensive car, pusher, conveyor, chain or roller hearth type furnaces.

CONTROLLED ATMOSPHERE CAR TYPE FURNACES



Simply designed for long, trouble-free service and little or no maintenance. Equipped to handle material of nearly any size, shape and height. Ideally suited for heat treating, spheroidizing and annealing applications.

"CARBOFRAX" is a registered trade-mark indicating manufacture by the Carborundum Co.

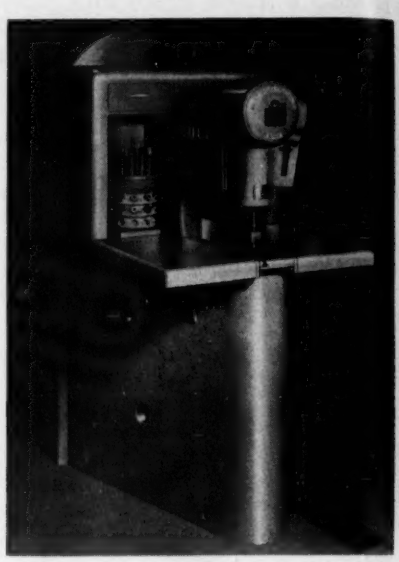
All GASMACO furnaces are individually designed to fit your particular furnace requirements to assure maximum operating economy. It will pay you to investigate these furnaces for your next heat-treating job.

THE GAS MACHINERY COMPANY
16116 WATERLOO ROAD
CLEVELAND 10, OHIO

Designers Fabricators · Erectors
Gas Plant Equipment and Industrial Furnaces

holds various round and shaped punches and dies. Three dies of various clearances are provided for each punch to accommodate material up to 3/16-inch thick.

A 5 15/32-inch opening under the ram permits using standard type BL hole punching and type NA notching units. Standard sliding filler plates are interchangeable with the

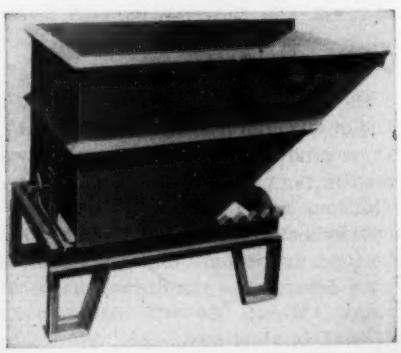


sliding holder. Nibbling is practically automatic by positioning nibble lever to provide continuous operation of the ram. Hydra-New-Matic head of machine operates with minimum vibration and noise at 165 strokes per minute for single hole punching and nibbling.

Check No. 5 on Reply Card for more Details

Automatic End Dump

Sand, castings, scrap, stampings and other heavy materials may be handled by the automatic end dump, built by Palmer-Shile Co., 16025



Fullerton Ave., Detroit 27, Mich., for use with any fork or lift truck. It may be built with rubber or metal wheels instead of legs, making it better suited for moving around machinery and through narrow aisles.

Truck is made of heavy steel plate,

Rough machining a universal shape mill roll.

CUSTOM MADE ROLLS

There is a Phoenix roll for every application, whether it be for the large universal shape mills or for the small mills rolling precious metals. Pittsburgh Rolls has made rolls for every purpose during the past 77 years and our experienced metallurgists and foundrymen understand the problems confronting the mill operators in everyday practice on their mills.

The use of Pittsburgh rolls for all rolling operations will result in "less cost per ton of steel rolled."

PITTSBURGH ROLLS

DIVISION OF BLAW-KNOX COMPANY, PITTSBURGH 1, PENNSYLVANIA

This 16" x 10" Reel Block being driven through a Horsburgh & Scott speed reducer is just one of many different types of machines and operations in steel mills where H & S has supplied equipment for transmitting power. For over fifty years H & S has furnished gears and speed reducers to the steel industry . . . designing and producing equipment that is accurate, dependable, efficient . . . built to endure.

Valuable information is at your service in our complete speed reducer catalog . . .

Send note on Company Letterhead for Speed Reducer Catalog 46

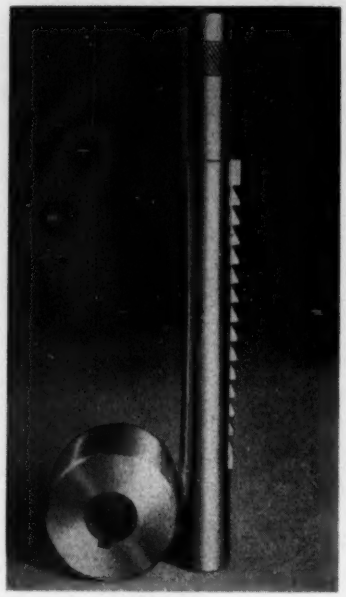
THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 HAMILTON AVENUE • CLEVELAND 14, OHIO, U. S. A.

reinforced with heavy angles, welded together. Geared-to-truck rockers are self-seating and smooth operating. Sizes of ½ and 1 cubic yard are available.

Check No. 6 on Reply Card for more Details

Keyway Broach

A push broach consisting of a hardened and ground body slotted for a high speed steel blade held in place by a heavy locking nut is being manufactured by Sloan Machine Co., 18725 St. Clair Ave., Cleveland 10, O. Called the Horton Keeway, it may be used in any arbor press. Keyways made with it are centered with the hole, square and to exact width and depth. The number of passes that must be made to complete the keyway will vary from two to five depending on the size of the bore.



Broaches with body diameters from ⅜ to 2½-inches by ⅛-inch increments are available for broaching standard keyways in holes from 1½ to 5 inches long.

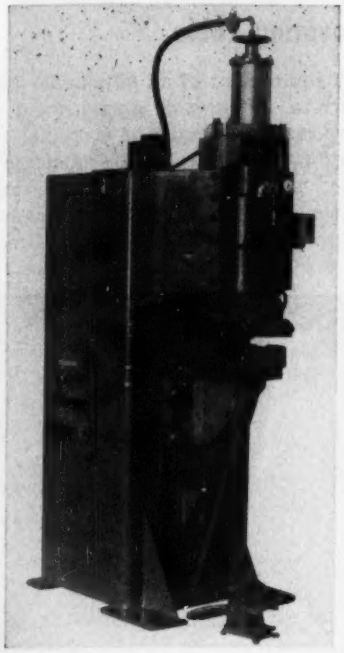
Check No. 7 on Reply Card for more Details

Projection Welder

As developed by Federal Machine & Welder Co., Warren, O., a new projection welder, using simplified dies, is being used to weld 4000 pieces per 8 hour day. One cycle of current is used to complete the weld, the short timing being controlled with a synchronous panel. High current capacity necessary for welding light materials of large areas at short intervals of time is obtained from a 175 kilovolt ampere water cooled welding transformer.

Low inertia spring head, incorpo-

rating one slide within a slide and leaf springs, gives a quick follow-up. A standard T-slot platen permits quick and easy die change. The adjustable nonretractable stroke cylinder

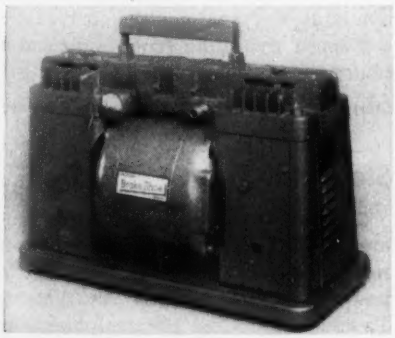


makes possible use of various sizes and designs of dies. Quick and simple adjustments can be made in the heights, depths, angles, etc. of dies and holders to fit the work.

Check No. 8 on Reply Card for more Details

Air Compressors

Air which is 100 per cent oil-free is produced by two portable fractional horsepower air compressors introduced by Kellogg Division of American Brake Shoe Co., 230 Park Ave., New York 17, N. Y. Model 17-C



(illustrated) delivers 4.4 cubic feet per minute of free air at 40 pounds pressure. Power is furnished by a ½-horsepower electric motor. "Lubricated for life" ball bearings are utilized and entire mechanism is encased in a welded steel frame.

Model 8-C delivers 2.2 cubic feet per minute at 25 pounds pressure, power being supplied by a ¼-horse-

"Automatic" Sprinkler
FOR INVESTMENT PROTECTION
"Automatic" Sprinklers
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HUB
of the
SOUTH
Throughout the state of Georgia . . . the South . . . in fact, throughout the country at large, "Automatic" Sprinkler serves business, commercial and industrial alike.
From a small beginning back just before the turn of the century, "Automatic" Sprinkler has steadily risen in importance and is today the recognized leader in the field of fire protection. At the time of its origin, "Automatic" Sprinkler established a definite course of action from which it has never deviated — to design, produce and install equipment that would answer the need for complete and adequate fire-protection, no matter what the hazard.
Owners of "Automatic" Sprinkler protected properties have been paid handsome dividends on the basis of this policy. They will continue to profit, for singleness of purpose, coupled with intelligent and persistent research, has resulted in fire protection that truly serves through the saving of lives and property as well as present and future earnings.
You will find it wise to plan adequate fire protection for your property now and, in that planning, be sure to include "Automatic" Sprinklers, an important investment today . . . perhaps welcomed protection tomorrow.
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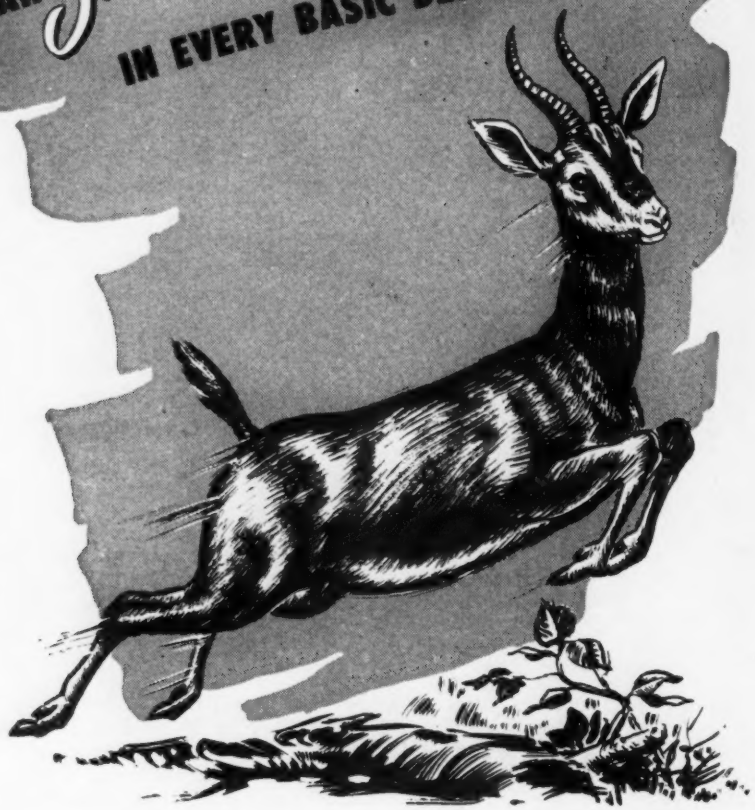
OFFICES IN PRINCIPAL CITIES OF NORTH and SOUTH AMERICA

SWIFT • SURE • STURDY • SILENT • SMOOTH • STEADY

PLAN *Smooth* GAZELLE-LIKE PERFORMANCE IN EVERY BASIC DESIGN

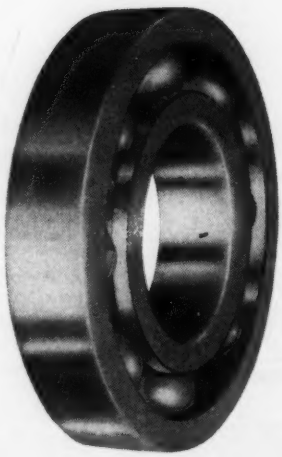


You've often remarked that no piece of equipment can be superior to its component parts...

You appreciate the broad recognition and acceptance of BCA Ball Bearings in industry...

You know you can tell your engineers to draw upon our half-century of experience in friction control practices, encompassing many varied fields of industry...

You, who insist upon continuous, full-capacity, trouble-free operation, know this can be assured by specifying BCA Ball Bearings.



BEARINGS COMPANY OF AMERICA
LANCASTER, PENNSYLVANIA

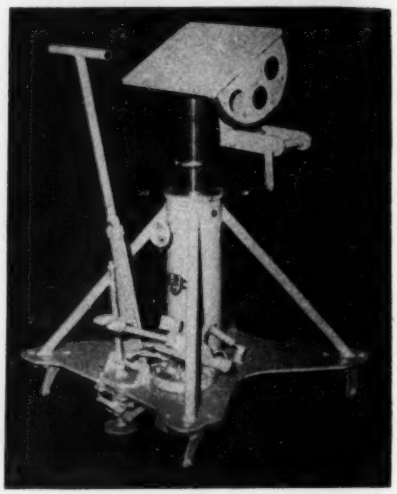
BCA RADIAL • ANGULAR CONTACT • THRUST BALL BEARINGS

power electric motor. Equipped with a single air cleaner, it has a force feed oil system. Mounting is on a steel base with rubber feet.

Check No. 9 on Reply Card for more Details

Elevating Table

Requirement of an adjustable stand with a tilting top arrangement for accurate positioning of a special drilling tool is met by the adaption of the standard hydraulic elevating table designed by Lyon-Raymond Corp., 5461 Madison Ave., Greene,



N. Y. A standard model table with a telescopic cylinder gives a range of elevation of 28 inches lowered height to 50 inches raised height.

Its special hinged mounting bracket can be adjusted 45 degrees above and below horizontal by a hand-operated work and gear segment mechanism. Metal casters provide a maximum capacity of 2000 pounds. Rubber tired wheels reduce the capacity but are available. Optional equipment includes a 2-speed hydraulic foot pump and a telescoping towing handle.

Check No. 10 on Reply Card for more Details

Steel Mill Truck

Designed to handle the ever increasing size strip coils from steel mills, the new 20-ton ram type electric power truck, announced by Yale & Towne Mfg. Co., Philadelphia, Pa., has a lifting height of 10 1/2-feet, a maximum speed of 5 miles per hour and a 360 degree rotating drive unit, permitting operation in 10 foot wide aisles. The K41 trucks are designed so the operator can see all loading, transporting and tiering operations without leaving his operating position.

Rated truck capacity is 25,000 pounds with a load 92 inches long,

EVER MEET AN AD... talking?

MOST ads have work to do—selling goods or services.

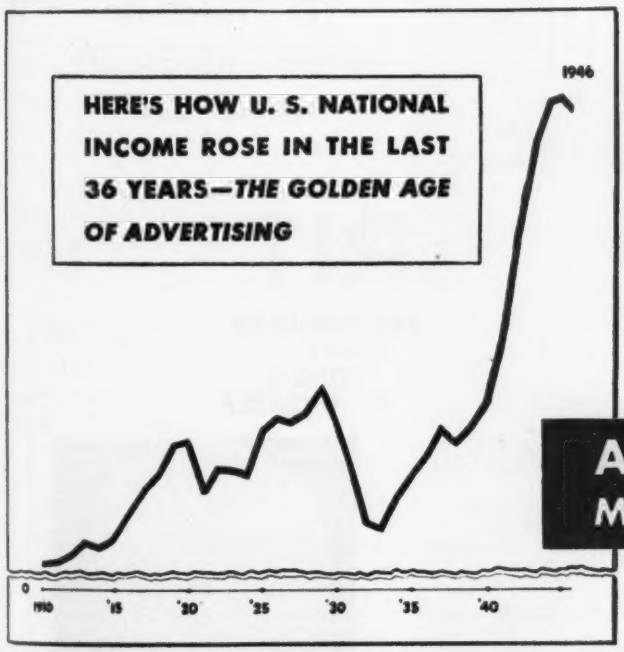
I am an ad. But I'd just like to talk with you and tell you how important advertising is to America—and to *you*.

No matter what kind of job you have, your pay check depends in the last analysis on somebody selling something to somebody else. And advertising is the fastest, cheapest way ever devised of selling goods and services.

So every ad you see or hear starts an endless chain that leads to more and better jobs for all.

When more goods are sold, there are more jobs in the factory—more jobs in the mines and farms to supply the goods the factory uses. More jobs at banks, railroads, stores and other industries that benefit indirectly.

That's why more and better advertising means bigger and better jobs—for you and everyone. That's why advertising makes *your* job more secure.



This rise in the standard of living for you and yours is unequalled in all history. Advertising helped raise this standard, is needed even more today to sell industry's new developments.

OTHER WAYS ADVERTISING HELPS YOU AND YOUR FAMILY

1 **Brings you better goods for less money.**

2 **Makes shopping more pleasant and easier.**

3 **Gears consumer demand to production, to create prosperity.**

Advertising... BY SELLING MORE GOODS TO MORE PEOPLE
Makes your job more secure

Advertising Federation of America

40,000 pounds with a load 42 inches long. Total truck weight is 6500 pounds. Each of two forward pairs of wheels are articulated to prevent throwing entire weight of truck on any one tire when irregularities in the flooring are encountered. Elevating mechanism has centrifugal and dynamic brakes for control of lowering speed and magnetically operated holding brakes.

Check No. 11 on Reply Card for more Details

Hydrostatic Tube Tester

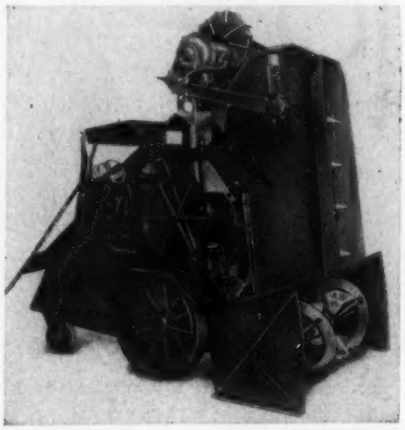
Tubes with diameters from 3/4 to 3-1/2 inches and from 10 to 26 feet long may be tested at preset pressures from 750 to 3000 pounds with the new hydrostatic tube tester manufactured by R. D. Wood Co., Philadelphia, Pa. Testing of tubes is conducted with a fluid, usually water, under hydraulic pressure.

Machine is essentially a long flat steel bench with steel tension bars along the top of both long sides. These bars are drilled so that guides and head can be moved in 6-inch increments within its capacity. Movable head has an 8-inch minimum and 12-inch maximum stroke. Tube is clamped by air-operated clamping carriages. Entire operation may be controlled by one man. Machine is self-contained.

Check No. 12 on Reply Card for more Details

Sand Conditioner

Operated by one man, the model DPL self-loading sand conditioner, made by Royer Foundry & Machine Co., Kingston, Pa., moves into a sand



pile, scoops up the sand and feeds it into a built-in combing belt sand separator and blender From 40 to 50 tons of conditioned sand are produced per hour, with trash culled out. Three motors, with a total horsepower of 11, operate the entire machine. Forward or backward motion is from 6.2 to 50.1 feet per minute.

Sand is picked up by a screw and funneled into conveyor buckets which in turn empty their load onto the combing belt. Sand is cleaned down to the floor. Trash is discharged into a retainer bin from which it may be ejected by a lever at the end of the run.

Check No. 13 on Reply Card for more Details

Selenium Rectifier

Direct current power up to 5000 amperes and varying voltages from 1 to 9 may be supplied by the style 5009 selenium rectifier, built by Bart-Messing Corp., 45 Morgan Ave., Brooklyn 6, N. Y., and suited for chromium, bright nickel and acid copper plating as well as electrocleaning and electropolishing. Full load efficiency is 72 per cent, increasing to 83 per cent at 20 per cent load.

Tap switch positions may be changed without plating interruption. Selenium stacks are rated with 15,500 square inches of rectifying area and are heavily coated for corrosion pro-

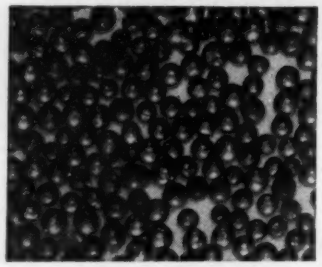
ACCEPTED
BY AMERICA'S LARGEST INDUSTRIAL PLANTS TO DO THE TOUGHEST BLASTING AND PEENING OPERATIONS

HI-GRADE METALLIC SHOT AND GRIT

FAMOUS
FOR ITS ABILITY TO STAND UP UNDER REPEATED HARD USE

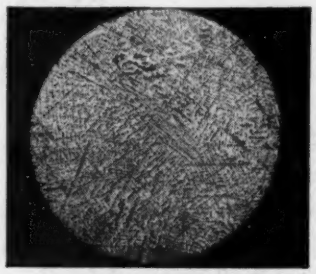
- ROUND
- UNIFORM IN SIZE
- UNIFORM IN HARDNESS
- LACKS IRREGULAR SHAPES

- RECTANGULAR
- SHARP
- TOUGH
- DURABLE



UNRETOUCHED PHOTO OF HI-GRADE SHOT

CLAYTON-SHERMAN ABRASIVES COMPANY
3896 LONYO ROAD
DETROIT 10, MICHIGAN
CEdar 7200



MICROSCOPIC STRUCTURE OF METAL

The CONE AUTOMATIC MACHINE COMPANY sees many GOOD THINGS AHEAD

It is reported that . . . . . .

The new Kathleen coal mine in DuQuoin, Illinois, is using "fireless blasting," a new method that substitutes compressed air at 10,000 lbs. per sq. in. for explosives.

get ready with CONE for tomorrow

A tiny wind tunnel 10 inches square is being built at the University of California to study air flow at supersonic speeds at high altitude pressures.

be ready with CONE for today

Shell Chemical Corp. now has acrolein in large-scale commercial production.

get ready with CONE for tomorrow

Warsaw Elevator Co. has applied "fluid drive" to elevators.

be ready with CONE for today

Engineering studies have resulted in a new slope design for the banks of canals. If the engineers are correct, the rebuilding of the Panama Canal at sea-level is not only practical, but would make it invulnerable to attack by modern weapons.

get ready with CONE for tomorrow

Westinghouse Electric Corp. is using radioactive isotopes in fundamental metallurgical studies.

be ready with CONE for today

Ohio Power Co. safely spliced a pole-mounted 66 kw. electrical power conductor without de-energizing the line.

get ready with CONE for tomorrow

A new vacuum cleaner for factory floors is driven by a gasoline engine and is claimed to clean an "acre-an-hour." It is made by G. H. Tennant Co., 2551 N. 2nd St., Minneapolis.

Swallow Airplane Co. of Wichita has a lock nut with fiber insert which is removable and replaceable.

be ready with CONE for today

Westinghouse has a new idea in the design of electric locomotives. By standardization they have made it possible to assemble locomotives on a "building block" principle, giving the buyer an essentially custom-made piece of equipment built with standard parts.

get ready with CONE for tomorrow

Acetylene gas will be produced commercially by the electric discharge process at the Houston Oxygen Co.

Several newspapers are interested in the new mill of the Gary Paper Mills in Gary, Ind., where newsprint will be reclaimed by removing the ink.

be ready with CONE for today

Instrument Development Laboratories of 229 West Erie St., Chicago, have an instrument the size of a fountain pen for measuring radioactivity.

get ready with CONE for tomorrow

Reynolds Metals Co. will now fortify its aluminum paints against fungicidal growths and molds.

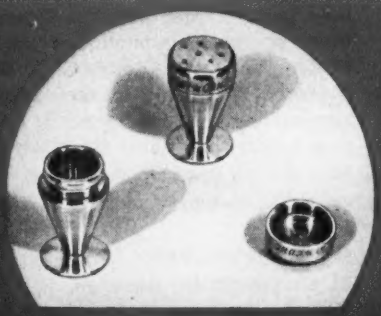
be ready with CONE for today

B. F. Goodrich is making conveyor belts of glass fabric to carry loads too hot for other materials.

get ready with CONE for tomorrow

Allis Chalmers' new diesel tractor uses the hydraulic torque convert instead of the conventional transmission.

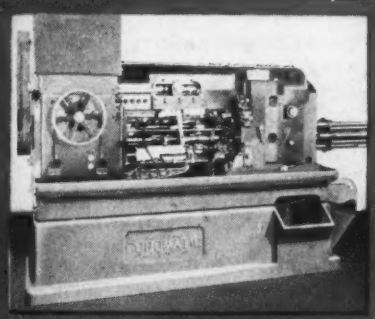
FOLLOW THESE PAGES FOR NEWS OF PROGRESSIVE PRODUCTION



ADAPTABLY CONOMATIC

The value of a machine depends on the work it does and how well it does it. The utilization of 25 tools in a total of 6 seconds to produce the two parts of the piece shown is the work of an adaptable machine well done.

Ask your CONE *representative to show you our new color motion picture*

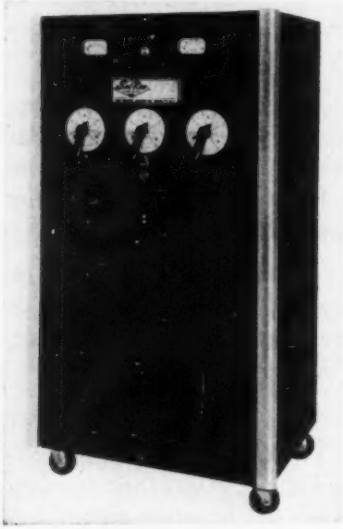


CONE

AUTOMATIC MACHINE CO., INC. ★ WINDSOR, VERMONT, U.S.A.

50

tection. Safety elements include: Overload protection in direct current bus circuit; protection against ventilation restriction by shutting off

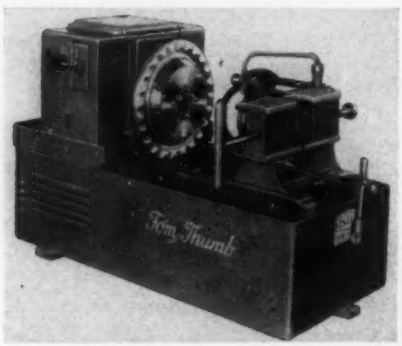


rectifier; internal cabinet lining of Tygon for corrosion protection. Input is 200-220-440 volts, 3-phase, 60 cycles.

Check No. 14 on Reply Card for more Details

Threading Machine

Tom Thumb No. 582 portable threading machine, built by Oster Mfg. Co., 2085 East 61st St., Cleveland 3, O., has a standard range of ¼ to 2 inches on pipe. Optional ranges are: 1/8-inch, pipe; 2-1/2 to 8



inches, pipe, with special drive shaft; bolt range is 1/4 to 1-1/2 inches. Two-inch nipples as short as 3-1/2 inches may be threaded without a nipple chuck. Regularly equipped for bench use, a steel stand with 16-inch wheels, is available when frequent portability is desired.

Spinfast front chuck eliminates need of a chuck wrench; a quick spin of the chuck wheel chucks and unchucks the pipe instantly. Rear chuck has three plain jaws and is universal centering. Die head is quick opening and of the adjustable floating type with top opening up to permit view of thread as it is cut and bottom opening for chips to fall into pan. All dies are adjusted simultaneously.

Check No. 15 on Reply Card for more Details

• • •

RECTANGULAR EJECTOR TOOL: A vertical type ejector tool with rectangular carbide insert is offered by Super Tool Co., Detroit 13, Mich. Two styles are available: One with a straight holder for shoulder cuts which presents insert with a 15 degree lead angle or right angle to work. An offset holder for roughing has same lead angles.

Check No. 16 on Reply Card for more Details

EASILY SET RELIEF VALVES: Five pressure ranges—0-15, 10-50, 40-125, 115-250 and 235-450 pounds per square inch—are available in the hydraulic and pneumatic relief valves manufactured by Parker Appliance Co., Cleveland 12, O. Adjustment within range is by an external threaded cap. Sizes offered are ¼ to ¾-inch, larger on order.

Check No. 17 on Reply Card for more Details

TOUCH-UP TINNING: Tinning operations such as rustproofing metal, regalvanizing spots, tinning bearings may be performed with the Kromover touch-up pencil announced by All-State Welding Alloys Co., White Plains, N. Y. Only surface preparation necessary is wiping off of oil and dirt before gas flame application at 450° F.

Check No. 18 on Reply Card for more Details

VACUUM PICKER: Operated by 20 to 45 pound air pressure, the Pres-Vac vacuum type picker, made by F. J. Littell Machine Co., Chicago 13, Ill., operates with one or two vacuum cups which are placed on a flat piece of material. Pulling of trigger by operator causes cup to pick up material. Cup, on end of extension handle, feeds material into press, keeping hands out of the danger zone.

Check No. 19 on Reply Card for more Details

TOOL BALANCER: All types of portable tools weighing up to 10 pounds may be suspended in balance by the easily adjustable model 7072 balancer, announced by Aro Equipment Corp., Bryan, O. It is designed to provide in-line suspension of tools.

Check No. 20 on Reply Card for more Details

GAS BURNER SAFEGUARD: Electronic flame failure protection and semiautomatic ignition control for all types of gas and oil burning equipment having continuous gas pilot ignition are provided by the Fireye FF-6 system announced by Combustion Control Corp., Cambridge 42, Mass. When flame fails, fuel is cut off and an alarm sounded, if desired. Response is to flame itself.

Check No. 21 on Reply Card for more Details

GROMMET INSERTER: Grommets may be easily and rapidly inserted into panels, chassis, etc. with a hand inserter developed by D. B. Rich Mfg. Co., Chicago 30, Ill. It is offered in four standard sizes. Tool nose is inserted in hole to receive grommet, grommet is placed in claw nose and tool is withdrawn.

Check No. 22 on Reply Card for more Details

PAINT STRIPPER: Aluminum, copper, brass, magnesium, zinc, steel, etc., are not affected in the time required for the removal of paint by Electro cold paint stripper, developed by Allied Finishing Specialties Co., Chicago 12, Ill. A wide variety of finishes may be removed by the non-inflammable stripper.

Check No. 23 on Reply Card for more Details

INERT PACKING: Solvents, acids, mixtures of acids or caustic, at temperatures to 690°F will not affect Teflon packings for valves, centrifugal and rotary shafts, etc., made by Crane Packing Co., Chicago 13, Ill. Offered with and without lubricant impregnation, it is available in braided sizes from ⅛ to 1 inch.

Check No. 24 on Reply Card for more Details

THICKER RUBBER TIRE: The De-Luxe Cushion, a pressed-on industrial rubber tire manufactured by B. F. Goodrich Co., Akron, O., is made with smooth and nonskid treads. It has a greater profile height and provides greater cushioning for industrial trucks and tractors.

Check No. 25 on Reply Card for more Details

4-WAY SELECTOR VALVE: Developed by Electrol Inc., Kingston, N. Y., it offers a simple means of controlling flow to remote actuating cylinders of hydraulic systems. Valve has four line connections and a group of spring-loaded poppet valves interconnected by ducts. Cam actuation opens the valves.

Check No. 26 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

LABOR TROUBLE—Mounting labor trouble in industry presents an increasingly serious threat to continued high-level steel production and metalworking operations.

Collapse of negotiations between soft coal operators and the miners last week, before they had scarcely started, is posing a particularly difficult hurdle for the summer months. Settlement of this dispute before coal contracts expire June 30 now appears more remote than ever. While a government injunction may prevent strike action until September, the whole situation makes planning ahead extremely difficult for both producers and consumers of steel.

WAGE DRIVE—Threat of work interruption in the coal mines comes at a time when labor unrest is spreading in general manufacturing industry. The automotive industry at the moment is confronted with increasing labor trouble. The third-round wage drive, which was stalled several weeks ago in the basic steel industry, is being pushed with rising fervor in those industries not holding no-strike agreements on wages. Chrysler Corp. plants continue struck, and now workers at General Motors plants have filed notice of a strike May 28. Rumblings of trouble ahead are heard coming from the Ford plants.

OUTCOME SIGNIFICANT—There seems little doubt outcome of the Chrysler dispute will hold great significance not only for other automotive interests but general metalworking lines as well. Success of the union's third-round wage drive at Chrysler, it is believed, would spur wage demands and work stoppages on a wide scale.

STEEL OPERATIONS—Rise in steelmaking operations leveled off last week as production approximated the level attained just prior to the recent strike in the coal mines. Estimated national ingot rate advanced 1/2 point to 95 per cent of capacity.

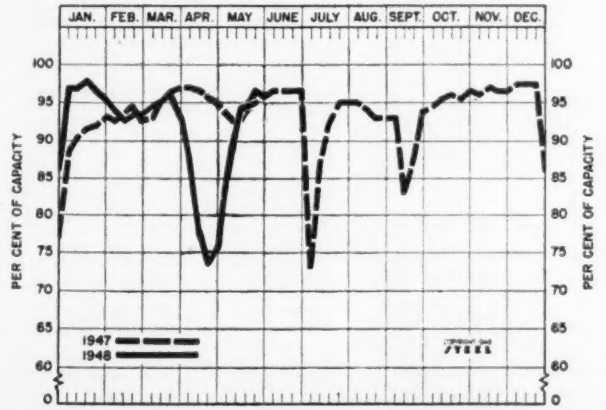
STEEL SUPPLY—Pressure for steel from consuming industry is unrelieved. As a matter of fact, threat of another work stoppage in coal, which would mean curtailment in steel output, is serving to intensify demand. Supplies are unbalanced to an alarming degree. One cause for this is the off-grade heats of steel resulting from use of poor quality coal which the mills were forced to take in during the coal strike. Buyers are taking every pound of metal they can get their hands on. For example, though its plants are down, Chrysler continues to take tonnage shipments from the mills, and General Motors is making standby agreements to store tonnage at various points in event its plants should be closed by a strike. Nevertheless, should paralysis at Chrysler spread to General Motors, and then on to an increasing number of accessory manufacturers, it appears likely substantial steel tonnage, of one description or another, would be held up.

PRICES—Considerable confusion continues in the various steel markets because of the lack of uniformity in quotations among the various producers. Indications are some time will elapse before the market again assumes normal pattern. Last week, two more of the larger producing interests joined the ranks of those that have cut prices. Two southern producers advanced their prices $3 per ton on pig iron, while a St. Louis district producer raised its pig iron price $5.75 per ton.

PRICE COMPOSITES—Advances in pig iron last week raised STEEL's arithmetical price composite on steelmaking pig iron to $40.12 from $39.21 the previous week. A year ago it stood at $32.49. Other composites held unchanged.

BASING POINT PRICING—Another nail has been driven into the coffin of the basing point system of pricing by the decision of the Circuit Court of Appeals for the Seventh Circuit, Chicago, upholding a Federal Trade Commission order forbidding the rigid steel conduit industry from using such pricing practice.

STEELWORKS OPERATIONS



DISTRICT STEEL RATES

Percentage of Ingot Capacity engaged in Leading Districts

	Week Ended May 22	Change	Same Week 1947	Same Week 1946
Pittsburgh	95.5	None	103	29
Chicago	93.5	None	94.5	56
Eastern Pa.	88	None	91.5	37
Youngstown	103	None	93	13
Wheeling	97.5	None	93.5	68.5
Cleveland	96.5	+ 0.5	91	79
Buffalo	93	None	86	35
Birmingham	100	None	99	44
New England	79	+ 1	95	67
Cincinnati	106	+ 2	94	84
St. Louis	84	+ 6	68.5	49.5
Detroit	100	None	93	75
Estimated national rate	95	+ 0.5	96.5	45

Based on weekly steelmaking capacity of 1,802,476 net tons for 1948; 1,749,928 tons for 1947; 1,762,381 tons for 1946.

COMPOSITE MARKET AVERAGES

Arithmetical Price Composites*

	May 22	May 15	Month Ago Apr. 1948	Year Ago May 1947	5 Years Ago May 1943
Finished Steel	$80.27	$80.27	$81.14	$69.82	$56.73
Semifinished Steel	68.62	68.62	68.72	52.10	36.00
Steelmaking Pig Iron	40.12	39.21	39.21	32.49	23.00
Steelmaking Scrap	40.67	40.67	40.41	29.75	19.17

FINISHED STEEL WEIGHTED COMPOSITE†

Apr. 1948	3.57975¢
Mar. 1948	3.630789¢
Apr. 1947	3.12077¢
Apr. 1943	2.42785¢

***STRAIGHT ARITHMETICAL COMPOSITES:** Computed from average industry-wide base prices on Finished Carbon Steel (hot-rolled sheets, cold-rolled sheets, cold-rolled strip, hot-rolled bars, plates, structural shapes, basic wire, standard nails, tin plate, standard and line pipe), on Semifinished Carbon Steel (rerolling billets and slabs, sheet bars, skelp, and wire rods), on Basic Pig Iron (at eight leading basing points), and on Steelworks Scrap (No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania). Steel arithmetical composites, dollars per net ton; pig iron and scrap, gross ton.

†FINISHED STEEL WEIGHTED COMPOSITE: Computed in cents per pound, base prices, weighted by actual monthly shipments of following products, representing 82 per cent of total steel shipments in the latest month for which statistics are available, as reported by American Iron & Steel Institute: Structural shapes; plates, standard rails; hot and cold-finished carbon bars; black butt weld pipe and tubes; black lap weld pipe and tubes; black electric weld pipe and tubes; black seamless pipe and tubes; drawn wire; nails and staples; tin and terne plate; hot-rolled sheets; cold-rolled sheets; galvanized sheets; hot-rolled strip; and cold-rolled strip. April figure is preliminary.

COMPARISON OF PRICES

Representative market figures for current week; average for last month, three months and one year ago. Finished material (except tin plate) and wire rods, cents per lb; semifinished (except wire rods) and coke, dollars per net ton; others dollars per gross ton.

Finished Materials

	May 22, 1948	Apr. 1948	Feb. 1948	May 1947
Steel bars, Pittsburgh	2.875c	2.90c	2.90c	2.60c
Steel bars, del. Philadelphia	3.365	3.356	3.356	2.98
Steel bars, Chicago	2.875	2.90	2.90	2.60
Shapes, Pittsburgh	2.775	2.80	2.80	2.50
Shapes, del. Philadelphia	2.98	2.968	2.968	2.64
Shapes, Chicago	2.775	2.80	2.80	2.50
Plates, Pittsburgh	2.925	2.95	2.95	2.65
Plates, del. Philadelphia	3.21	3.19	3.19	2.85
Plates, Chicago	2.925	2.95	2.95	2.65
Sheets, hot-rolled, Pittsburgh	2.775	2.80	2.80	2.50
Sheets, cold-rolled, Pittsburgh	3.50	3.55	3.55	3.20
Sheets, No. 10 galv., Pittsburgh	3.90	3.95	3.95	3.55
Sheets, hot-rolled, Gary	2.775	2.80	2.80	2.50
Sheets, cold-rolled, Gary	3.50	3.55	3.55	3.20
Sheets, No. 10 galv., Gary	3.90	3.95	3.95	3.55
Strip, hot-rolled, Pittsburgh	3.05	3.05	2.925	2.50
Strip, cold-rolled, Pittsburgh	3.775	3.80	3.675	3.20
Bright basic, bess. wire, Pittsburgh	3.725	3.775	3.775	3.425
Wire nails, Pittsburgh	5.125	5.20	4.95	4.125
Tin plate, per base box, Pittsburgh	$6.65	$6.70	$6.70	$5.75

Semifinished

Sheet bars, Pittsburgh, Chicago	$60.00	$60.00	$56.79	$44.64
Slabs, Pittsburgh, Chicago	45.00	45.00	42.59	37.51
Rerolling billets, Pittsburgh	45.00	45.00	42.59	37.51
Wire rod 7/32 to ¼-inch, Pitts.	3.175c	3.175c	3.175c	2.55c

Pig Iron

	May 22, 1948	Apr. 1948	Feb. 1948	May 1947
Bessemer, del. Pittsburgh (N.&S. sides)	$40.996	$40.996	$40.996	$34.83
Basic, Valley	39.00	39.00	39.00	33.00
Basic, eastern del. Philadelphia	42.17	42.004	42.004	35.52
No. 2 fdry., del. Pgh. (N.&S. sides)	40.58	40.496	40.496	34.33
No. 2 fdry., del. Philadelphia	42.67	42.504	42.504	36.02
No. 2 foundry, Chicago	39.00	39.00	39.00	33.00
No. 2 foundry, Valley	39.50	39.50	39.50	33.50
Southern No. 2, Birmingham	39.38	37.88	37.88	29.28
Southern No. 2, del. Cincinnati	45.71	42.23	40.74	34.75
Malleable, Valley	39.50	39.50	39.50	33.50
Malleable, Chicago	39.50	39.50	39.50	33.50
Charcoal, low phos., fob Lyles, Tenn.	58.00	55.00	55.00	40.50
Ferromanganese, fob cars, Pittsburgh	151.00	151.00	151.00	140.25

Scrap

Heavy melt. steel, No. 1, Pittsburgh	$40.25	$40.25	$40.44	$30.00
Heavy melt. steel, No. 2, E. Pa.	39.00	39.00	39.125	28.00
Heavy melt. steel, No. 1 Chicago	39.25	39.10	39.125	29.25
Heavy melt. steel, No. 1, Valley	40.25	40.25	40.25	31.55
Heavy melt. steel, No. 1, Cleveland	39.75	39.75	39.75	30.75
Heavy melt. steel, No. 1, Buffalo	43.00	43.00	43.63	32.20
Rails for rerolling, Chicago	52.50	49.50	51.00	34.50
No. 1 cast, Chicago	69.00	68.40	66.00	38.50

Coke

Connellsville, beehive furnace	$13.00	$12.50	$12.50	$9.125
Connellsville, beehive foundry	15.125	14.875	14.78	10.375
Chicago, oven foundry, del.	20.75	19.25	19.25	16.10

FINISHED AND SEMIFINISHED IRON, STEEL PRODUCTS

Finished steel quoted in cents per pound and semifinished in dollars per net ton, except as otherwise noted. Prices apply on an individual producer basis to products within the range of sizes, grades, finishes and specifications produced at its plants. Delivered prices do not include the 3 per cent federal tax on freight.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, open market, $90-$95 per gross ton. Forging quality $46 per net ton, Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown.

Alloy Steel Ingots: Pittsburgh, $56 per gross ton.

Rerolling Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Buffalo, Birmingham, $45 per net ton; Cleveland, $47 per net ton; sales by smaller interests on negotiated basis at $85 per gross ton, or higher.

Forging Quality Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, $54 per net ton.

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $66 per gross ton.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Youngstown, $60 nom., per net ton; sales in open market $95-105 per gross ton.

Skelp: Pittsburgh, 2.85-2.90c; Youngstown, 2.90c per lb.

Tube Rounds: Pittsburgh, Chicago, Gary, Cleveland, $69-70 per net ton; some sellers quoting up to $120 per gross ton.

Wire Rods: Pittsburgh, Chicago, Birmingham, 7/32 to ¼-in., inclusive, $2.80-3.55 per 100 lb. 7/32 to 47/64-in., inclusive, $2.75, Cleveland; Galveston, $2.95; Worcester, $2.90-2.95. San Francisco (base del.), $3.5245.

Bars

Hot-Rolled Carbon Bars (O.H. only) and Bar-Size Shapes under 3-in. (Base 20 tons one size): Pittsburgh, Youngstown, Chicago, Gary, Birmingham, 2.85-2.90c; Cleveland, Buffalo, 2.90c; Detroit, del., 3.11c; eastern Mich., 3.18c New York, del., 3.43c; Phila., del., 3.34-3.39c; San Francisco (base, del.), 3.5845-3.95c; Los Angeles (base, del.), 3.579-3.86c; Seattle, 3.8375-3.85c, base.

Rail Steel Bars: Same basing points as merchant carbon bars. Prices upon application.

Hot-Rolled Alloy Bars (Base 20 tons one size): Pittsburgh, Youngstown, Chicago, Gary, 3.20-3.30c; Canton, Massillon, Buffalo, Bethlehem, 3.30c. (Texas Steel Co. uses Chicago base price as maximum fob Fort Worth, Tex., price on sales outside Texas, Oklahoma.)

Cold-Finished Carbon Bars (Base 40,000 lb): Pittsburgh, Chicago, Gary, Cleveland, Buffalo, 3.45-3.55c; Detroit, del., 3.71-3.73c; Toledo, 3.78-3.83c.

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Cleveland 4.00-4.10c; Gary, Buffalo, Canton, base 4.10c; Worcester, 4.20c.

Reinforcing Bars (New Billet): Pittsburgh, 2.70-2.75c; Chicago, Gary, Youngstown, Birmingham, 2.70; Sparrows Point, Buffalo, base 2.75c; San Francisco (base, del.), 3.3345c; Los Angeles (base, del.), 3.329c; Seattle, 3.88c-4.18c base.

Iron Bars: Single refined: Pittsburgh 7.70c (hand puddled), Economy, Pa., 8.65c. Double refined: Pittsburgh 9.75c (hand puddled), Economy, Pa., 10.00c. Staybolt: Pittsburgh 11.25c (hand puddled), Economy, Pa., 10.20c.

Sheets

Hot-Rolled Sheets (18 gage and heavier): Pittsburgh, Chicago, Gary, Birmingham, Youngstown, 2.75-2.80c; Cleveland, Buffalo, Sparrows Point, Ashland, Ky., base, 2.80c; Detroit, del., 3.01c; eastern Mich., del., 3.08c; Philadelphia, del., 3.06c; New York, del., 3.18c; Los Angeles (base, del.), 3.494-3.544c; San Francisco, (base, del.) 3.4995-3.5495c. (Alan Wood Steel Co., Conshohocken, Pa., quotes 4.20c, Sparrows Point equivalent).

Cold-Rolled Sheets: Pittsburgh, Chicago, Gary, 3.45-3.55c; Cleveland, 3.50-3.55c; Middletown, 3.50c; Buffalo, Youncstown, Sparrows Point, 3.55c; Granite City, 3.65c; Detroit, del., 3.76c; eastern Mich., del., 3.83c; New York, del., 3.93c; Philadelphia, del., 3.81c.

Galvanized Sheets, No. 10: (Based on 5 cent zinc) Pittsburgh, Gary, Birmingham, 3.85-3.95c; Chicago, Sparrows Point, Canton, Middletown, 3.95c; Kokomo, 4.55c; Youngstown, 3.95-4.45c; Granite City, 4.35c; New York, del., 4.33c; Philadelphia, del., 4.21c; Los Angeles (base, del.), 4.624c; San Francisco (base, del.), 4.6295c.

Corrugated Galvanized Sheets, No. 10: (Based on 5 cent zinc, Pittsburgh 3.95-4.05c; Chicago, 4.05c; Gary, Birmingham base, 3.95c.

Culvert Sheets, No. 16 flat (based on 5-cent zinc; corrugated 10 cents extra): Copper alloy: 4.45-4.55c, Pittsburgh; 4.45c, Gary, Birmingham; 4.55c Chicago; 4.90c, Kokomo; 5.00c, Granite City; 5.344c (base del.), Los Angeles; 5.3495c (base del.), San Francisco.

Copper-iron or pure iron: 4.80-4.90c, Pittsburgh; 4.80c, Gary; 4.90c, Chicago; 5.35c, Granite City.

Aluminized Sheets: Hot-dipped, coils or cut to lengths: Pittsburgh, 7.50c.

Long Ternes, No. 10: Pittsburgh, Chicago, Gary, base, 4.05c.

Enameling Sheets, No. 12: Pittsburgh, 3.85-3.95c; Chicago, Gary, 3.75-3.95c; Cleveland, Middletown, 3.85c; Youngstown 3.95c-4.45c; Granite City, 4.05c; Detroit, del., 4.11c-4.16c; eastern Mich., 4.18c-4.23c.

Electrical Sheets, No. 24: Field: Pittsburgh, Chicago, Gary, 4.40-4.50c; Kokomo, Ind., 4.60c. Armature: Pittsburgh, 4.70-5.30c; Chicago, Gary, 4.70-4.80c; Granite City, Ill., 5.25c; Kokomo, Ind., 4.90c. Electrical: Pittsburgh, 5.20-5.80c; Chicago, Gary, 5.20-5.30c; Granite City, Ill., 5.75c; Kokomo, Ind., 5.40c. Motor: Pittsburgh, 5.95-6.80c; Chicago, Gary, 5.95-6.05c; Granite City, 6.50c. Dynamo: Pittsburgh, 6.65 7.00c; Granite City, 7.20c. Transformer 72, 7.15-8.25c; 65, 7.85-9.20c; 58, 8.55-9.90c; 52, 9.35c, Pittsburgh.

Strip

Hot-Rolled Strip: Pittsburgh, 2.80c-3.30c; Chicago, Gary, Birmingham, Youngstown, Cleveland, 2.75-2.80c; Detroit, del., 2.96-3.01c; eastern Mich., del., 3.03-3.08c; San Francisco (base, del.), 3.5595c; Los Angeles (base, del.), 3.554c.

Cold-Rolled Strip: 0.25 carbon and less: Pittsburgh, 3.50-4.05c; Cleveland, 3.45-3.85c; Youngstown, 3.55-3.85c; Chicago, Gary, 3.55-3.65c; Detroit, del. 3.71-3.76c; eastern Mich., 3.78-3.83c; Worcester, base, 3.65c.

Cold-Finished Spring Steel: Cleveland base: 0.26-0.40 carbon, 3.55c; over 0.40 to 0.60 carbon, 4.95-5.05c; over 0.60 to 0.80, 5.55-5.65c; over 0.80 to 1.05, 7.05-7.15c; over 1.05 to 1.35, 9.35-9.45c; add 0.20c for Worcester.

Tin, Terne, Plate

Tin Plate: Pittsburgh, Chicago, Gary, per base box of 100 lb, 1.25 lb coating $6.50, 1.50 lb coating $6.70; Sparrows Point, Birmingham and Warren, O., $6.60 and $6.80, respectively; Granite City, $6.70 and $6.90, respectively.

Electrolytic Tin Plate: Pittsburgh, Gary, per base box of 100 lb, 0.25 lb tin, $5.70; 0.50 lb tin, $5.90; 0.75 lb tin $6.10; Sparrows Point, Birmingham and Warren, O., $5.80, $6.00, $6.20, respectively; Granite City, $5.90, $6.10, $6.30, respectively.

Can Making Black Plate: Pittsburgh, Gary, per base box of 100 lb, 55 to 70 lb basis weight, $5.10; 75 to 95 lb basis weight, $5.00; 100 to 128 lb basis weight, $5.10. Birmingham and Warren, O., $5.20, $5.10 and $5.20, respectively.

Holloware Enameling Black Plate: Pittsburgh, Chicago, Gary, base 29-gage, 4.65c per lb; Sparrows Point, Warren, O., 4.75c; Granite City, 4.85c.

Manufacturing Ternes (Special Coated): Pittsburgh, Chicago, Gary, per base box of 100 lb, $5.80; Granite City, Birmingham, Sparrows Point, $5.90; Granite City, $6.

Roofing Ternes: Pittsburgh, per package 112 sheets; 20 x 28 in., coating I.C. 8-lb $15.30.

Plates

Carbon Steel Plates: Pittsburgh, Chicago, Gary, Birmingham, Youngstown, 2.90-2.95c; Cleveland, Sparrows Point, 2.95c; Coatesville, 3.45c; Claymont, 3.65c; Geneva, Utah, 2.90c; Det., del., 3.21c; New York, del., 3.33c; Phila., del., 3.21c; Boston, del., 3.423c; St. Louis, del., 3.269c; San Francisco and Los Angeles, del., 3.493c for sizes and grades produced at Geneva; 3.76c for sizes and grades produced at Fontana, Calif.

(Central Iron & Steel Co., Harrisburg, Pa., 5.10c, basing points.)

Floor Plates: Pittsburgh, 4.05c; Chicago, 3.95-4.05c; Gary, 3.95c; Cleveland, 4.20c.

Open-Hearth Alloy Plates: Pittsburgh, Chicago, Gary, 3.70c; Coatesville, 4.80c.

Clad Steel Plates: Coatesville, 10% cladding: Nickel clad, 21.50c; inconel-clad, 30.00c; monel-clad, 24.00c.

Shapes

Structural Shapes: Pittsburgh, Chicago, Gary, Birmingham, 2.75-2.80c; Buffalo, Bethlehem, 2.80c; New York, del., 3.06c; Phila., del., 2.98c; Geneva, Utah 2.75c; Los Angeles (base, del.), 3.424-3.474c for sizes produced at Torrance, Calif.; Los Angeles and San Francisco, del., 3.343c for sizes produced at Geneva, 3.81c for sizes produced by Bethlehem in East; San Francisco, del., 3.54c for sizes produced at Fontana, Calif.

Beams, Wide Flange: Pittsburgh, Chicago, 2.70c.

Alloy Structural Shapes: Pittsburgh, Chicago, Gary, 3.45-3.55c.

Steel Piling: Pittsburgh, Chicago, Buffalo, $3.30 per 100 lb.

Wire and Wire Products

(Fob Pittsburgh, Chicago, Cleveland and Birmingham per 100 pounds.)

Wire to Manufacturers in carloads

Bright, basic or bessemer *$3.45-4.00
Basic MB Spring (except Birm.).. **$4.85-4.95
Upholstery Spring (except Birm.). †$4.50-4.60

Wire Products to Trade in carloads

Wire, Merchant Quality
Annealed (6 to 8 base) .....††$4.10-4.20
Galvanized (6 to 8 base) .....††$4.55-4.65
(Fob Pittsburgh, Chicago, Duluth, Birmingham, per base column).

Nails
Standard, cement-coated, galvanized.. ‡91-94
Staples, polished and galvanized .... ‡‡91-94

Woven fence, 15½ gage and heavier. §97-100

Barbed wire, 80-rod spool .....§§111-113

Fence Posts (with clamps) ..... ★107

Bale ties, single loop .....★★94-100

* Worcester, $3.55; Duluth, $3.50, base; San Francisco (base, del.) $4.4645 bright basic only.

** Worcester, $4.95; Duluth & Trenton, N.J., $5.10 (bright only); San Francisco (base del.) $5.8845.

† Worcester $4.60; Duluth and Trenton, N. J., $4.75, base. San Francisco (base, del.) $5.5345 black upholstery.

†† One producer quotes 25 cents higher at Birmingham and Chicago; Worcester $4.20, annealed, $4.65, galvanized; Cleveland, annealed, $4.10, galvanized, $4.55 Duluth $4.10, annealed, $4.55, galvanized; Kokomo, Ind., $4.80 annealed, $5.25 galvanized; San Francisco (base, del.) $5.1145 annealed, $5.5645 galvanized.

‡ Cols. 108 and 114 also quoted Pittsburgh; Worcester 97; Cleveland 97; Duluth, 91; San Francisco (base, del.) 112.

‡‡ Cols. 108 and 114 also quoted Pittsburgh; Worcester 97, San Francisco (base del.) 112.

§ San Francisco (base del.) 120.

§§ San Francisco (base del.) 131.

★ Duluth, 104.

★★ San Francisco (base del.) 118; Chicago, Birmingham, 94-99.

Rails, Supplies

Rails: Standard, over 60-lb fob mill, $2.70-$2.75 per 100 lb. Light rails (billet), Pittsburgh, Birmingham, $3.05 per 100 lb; light rails (rail-steel), Williamsport, Pa., Pittsburgh prices upon application.

Relaying, 60 lb and over fob warehouse $60-$65 per net ton.

Supplies: Track bolts, 7.00c; heat treated, 7.25c. Tie plates $3.55-$3.65 per 100 lb, fob mill; $3.40 base. Seattle; $3.70 fob Pittsburg, Calif. Splice bars $3.75-$3.85 per 100 lb fob mill. Standard spikes, 4.85c; screw spikes, 6.75c. Axles, 4.45-4.50c.

Tubular Goods

Standard Steel Pipe: Base price in carlots, threaded and coupled, to consumers about $200 a net ton. Base discounts Pittsburgh on all types; Lorain on steel butt weld, and seamless; Gary, Ind., 2 points less on steel lap weld and 1 to 2 points less on steel butt weld on sizes produced in that district.

	Butt Weld			Butt Weld	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	44½	17	1	52½–53½	36½–37½
¼	44½	21½	1¼	53–54	37–38
⅜	41	17	1½	53½–54½	37½–38½
½	47–48	29½–30½	2	54–55	38–39
¾	50–51	33½–34½	2½, 3..	54½–55½	38½–39½

	Lap Weld		Elec. Weld		Seamless	
In.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
2	44½	28	44	27½	43½	27
2½ & 3	48½	32	47	30½	46½	30
3½-6	50½	34	49	32½	48½	32

Line Steel Pipe: Base price in carlots to consumers about $200 a net ton. Base discounts Pittsburgh and Lorain, O.

In.	Butt Weld	In.	Butt Weld
⅛	43½	1	51½-52½
¼	43½	1¼	52-53
⅜	40	1½	52½-53½
½	46-47	2	53-54
¾	49-50	2½ & 3	53½-54½

In.	Lap Weld	Elec. Weld	Seamless
2	43½	43	42½
2½ & 3	46½	46	45½
3½-6	48½	48	47½
8	50½	50	49½
10	50	49½	49
12	49	48½	48

Standard Wrought Iron Pipe: Base price in carlots, threaded and coupled, to consumers about $200 a net ton. Base discounts Pittsburgh.

	Butt Weld			Lap Weld	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅜	+46½	+74½	1¼	+12	+34½
½	+11	+35	1½	+ 6	+27½
¾	+ 1½	+25	2	— 1½	+20
1 and 1¼	— 4	+16½	2½-3½	— 4	+16
			4	— 8	+10½
1½	— 9½	+13	4½-8	— 6	+12
2	—10	+12½	9-12	+ 3	+21½

Boiler Tubes: Net base prices per 100 ft. fob Pittsburgh, in carload lots, minimum wall thickness, cut lengths 4 to 24 feet, inclusive.

		——Seamless——		—Elec. Weld—	
O.D.		Hot	Cold	Hot	Cold
Sizes	B.W.G.	Rolled	Drawn	Rolled	Drawn
1"	13	....	$12.21	$11.51	$11.51
1¼"	13	....	14.46	11.48	13.64
1½"	13	$13.72	16.14	12.69	15.22
1¾"	13	15.60	18.37	14.43	17.31
2"	13	17.48	20.57	16.17	19.39
2¼"	13	19.48	22.93	18.02	21.62
2¼"	12	21.46	25.25	19.86	23.80
2½"	12	23.51	27.65	21.75	26.06
2¾"	12	24.91	29.30	23.05	27.63
3"	12	26.15	30.77	24.18	29.00
3¼"	11	30.44	35.82	28.16	33.77
3½"	11	32.68	38.47	30.23	36.27
4"	10	40.57	47.73	37.53	44.99
4½"	9	53.77	63.29	....	....
5"	9	62.25	73.25	....	....
6"	7	95.56	112.44	....	....

Pipe Cast Iron: Class B, 6-in. and over $79.50 per net ton, Birmingham; $84.50, Burlington, N. J.; $91.12, del. Chicago; 4-in. pipe, $5 higher; class A pipe, $5 a ton over Class B.

Bolts, Nuts

Fob Pittsburgh, Cleveland, Birmingham, Chicago; add 19c per cwt in carlots, Lebanon, Pa.

Additional discounts: 5 for carloads; 15 for full containers, except tire, step, plow bolts.

Carriage and Machine Bolts

½-in. and smaller; up to 6 in. in length	45 off
⅝ and ⅝ x 6-in. and shorter	46 off
¾-in. and larger x 6-in. and shorter..	43 off
All diameters longer than 6-in.	41 off
Tire bolts	35 off
Step bolts	43 off
Plow bolts	54 off
Lag bolts	
All diameters 6 in. and shorter....	46 off
All diameters longer than 6 in.	44 off

Stove Bolts

In packages, nuts separate, 65-10 off; bulk 75 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

Semifinished hexagon	A.S. Light	A.S. Reg. and Heavy
⅞-in and smaller	46 off	.....
1⅛-in. and smaller	.....	44 off
½-in.-1-in.	44 off	.....
⅝-in.-1-in.	.....	43 off
1⅛-in.-1½-in.	42 off	41 off
1⅝-in. and larger	.....	35 off

Additional discount of 15 for full containers.

Hexagon Cap Screws (Packaged)

Upset 1-in. smaller by 6-in. and shorter (1020 bright)	53 off
Upset (1035 heat treated)	
⅝ and smaller x 6 and shorter....	48 off
¾, ⅞, & 1 x 6 and shorter.....	44 off

Square Head Set Screws

Upset 1-in. and smaller	57 off
Headless, ¼-in. and larger	40 off
No. 10 and smaller	52 off

Rivets

Fob Pittsburgh, Cleveland, Chicago, Birmingham

Structural ½-in. and larger	5.65c
Lebanon, Pa.	
.....5.65c plus 19c per cwt in cl., 26c lcl.	
⅞-in. and under	55 off
Lebanon, Pa.	
.....55 off plus 19c per cwt in cl., 26c lcl.	

Washers, Wrought

Fob Pittsburgh, Chicago, Philadelphia, to jobbers and large nut and bolt manufacturers, lcl ..... $1-$2 off

Tool Steels

Tool Steels: Pittsburgh, Bethlehem, Syracuse, Canton, O., Dunkirk, N. Y., base, cents per lb; reg. carbon 16.00-17.00c; extra carbon 20.60c; special carbon 24.00c; oil-hardening 26.00c; high carbon-chromium 47.00c.

W	Cr	V	Mo	Base Per lb
18.00	4	1	...	82.00c
1.5	4	1	8.5	59.00c
12	3	0.50	...	67.00c
6.40	4.15	1.90	5	63.00c
5.50	4.50	4	4.50	80.00c

Stainless Steels

Base, cents per lb, Pittsburgh, Chicago, and Washington, Pa.

Grade	Bars, Wire, Structurals	Plate	Sheets	Hot Rolled Strip	Cold Rolled Strip
CHROMIUM NICKEL STEELS					
301....	26.00c	29.50c	37.00c	22.00c	28.00c
302....	26.00	29.50	37.00	23.50	30.50
303....	28.50	31.50	39.00	29.50	36.00
304....	27.50	31.50	39.00	25.50	32.50
308....	31.50	37.00	44.50	31.00	38.00
309....	39.00	43.50*	51.00*	40.50	51.00
310....	53.50	56.50†	57.50‡	53.00	61.00
316....	43.50	48.00	52.00	43.50	52.00
321....	31.50	37.00	44.50	32.00	41.50
347....	36.00	41.50	49.00	36.00	45.50
431....	21.00	24.00	31.50	19.00	24.50
440A ..	26.00	31.00	36.50	26.00	30.50
STRAIGHT CHROMIUM STEEL					
410....	20.50	23.50	29.00	18.50	24.00
416....	21.00	24.00	29.50	20.00	25.50
420....	26.00	31.00	36.50	26.00	39.50
430....	21.00	24.00	31.50	19.00	24.50
430F ..	21.50	24.50	32.00	20.50	27.00
442, 443	24.50	28.00	35.50	26.00	35.00
446....	30.00	33.00	39.50	38.00	56.50
§501...	9.00	13.00	17.50	13.00	18.50
§502...	10.00	14.50	18.50	14.50	19.50
****STAINLESS CLAD STEEL (20%)**					
304....	....	24.00	22.00	....	....
410....	....	22.00	20.00	....	....
430....	....	22.50	20.50	....	....
446....	....	29.00	27.00	....	....

One producer quotes: * 6.50c higher, † 3.50c higher, ‡ 10.00c higher. § Low chromium. ** Fob Pittsburgh, Washington and Coatesville, Pa.; plate prices include annealing and pickling.

RAW MATERIAL AND FUEL PRICES

Minimum delivered prices do not include 3 per cent federal tax.

Pig Iron

Per Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., base	$40.00	$40.50	$41.00	$41.50
Newark, N. J., del.	42.39	42.89	43.39	43.89
Brooklyn, N. Y., del.	....	44.40	44.90	....
Philadelphia,. del.	42.17	42.67	43.17	43.67
Birmingham, base	38.88	39.38	....	....
Cincinnati, del.	....	45.71	....	....
Buffalo, base	40.00†	40.00†	40.50†	41.00
Boston, del.	48.42	48.42	48.92	....
Rochester, del.	42.22	42.22	42.72	43.22
Syracuse, del.	43.025	43.025	43.525	44.025
Chicago, base	38.50	39.00	39.50	40.00
Milwaukee, del.	40.22	40.72	41.22	41.72
Muskegon, Mich., del.	....	43.98	44.48	....
Cleveland, fob furnace	38.50†	39.00†	39.50†	40.00
Akron, del.	40.67	41.17	41.67	42.17
Duluth, base	39.00	39.50	40.00	40.50
Erie, Pa., base	38.50	39.00	39.50	40.00
Everett, Mass., base	....	45.00	45.50	....
Granite City, Ill., base	45.25	45.75	46.25	....
St. Louis, del.	46.00	46.50	47.00	....
‡Neville Island, Pa., base	39.00	39.50	39.50	40.00
Pittsburgh, del., N.&S. Sides	40.08	40.58	40.58	41.08
Provo, Utah, base	39.00	39.50	....	....
Seattle, Tacoma, Wash., del.	....	46.63	....	....
Portland, Oreg., del.	....	46.63	....	....
Los Angeles, San Francisco	46.13	46.63	....	....
Sharpsville, Pa., base	39.00	39.50	39.50	40.00
Steelton, Pa., base	40.00	40.50	41.00	41.50
Struthers, O., base	39.50	....	....	....
Swedeland, Pa., base	45.00	45.50	46.00	46.50
Toledo, O., base	38.50	39.00	39.50	40.00
Cincinnati, del.	43.05	43.55	....	....
Youngstown, O., base	39.00	39.50	39.50	40.00
Mansfield, O.	42.87	43.37	43.37	43.87

† Republic Steel Corp. quotes $2.875 higher for No. 2 foundry and malleable and $2.375 higher for basic at Buffalo, and $1.25 higher at Cleveland, effective on shipments during week ended May 23.

‡ To Neville Island base add: $0.86 for McKees Rocks, Pa.; $1.31 Lawrenceville, Homestead, McKeesport, Monaco; $1.73 Verona; $1.94 Brackenridge; $1.08 to Ambridge and Aliquippa.

Blast Furnace Silvery Pig Iron

6.00-6.50 per cent (base)....$49.50
6.51-7.00..$50.75 9.01- 9.50. 57.00
7.01-7.50.. 52.00 9.51-10.00. 58.25
7.51-8.00.. 53.25 10.01-10.50. 59.50
8.01-8.50.. 54.50 10.51-11.00. 60.75
8.51-9.00.. 55.75 11.01-11.50. 62.00

Fob Jackson, O., per gross ton; Buffalo base $1.25 higher. Buyer may use whichever base is more favorable.

Bessemer Ferrosilicon

Prices same as for blast furnace silveryy iron, plus $1 per gross ton.

Electric Furnace Silvery Pig Iron Si 14.01-14.50%, $77.50, Jackson, O.; $78.75, Niagara Falls; $78 open-hearth and $79 foundry grade, Keokuk, Iowa. Add $1 a ton for each additional 0.5% Si to 18%; 50c for each 0.05% Mn over 1%; $1 a ton for 0.045% max. phos.

Charcoal Pig Iron

Semi-cold blast, low phosphorus. Fob furnace, Lyles, Tenn.....$58

(For higher silicon iron a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Gray Forge

Neville Island, Pa. $39.00

Low Phosphorus

Steelton, Pa., Buffalo, Troy, N. Y., $46.00. Philadelphia, $48.81, delivered. Intermediate phosphorus, Central furnace, Cleveland, $42.00.

Differentials

Basing point prices are subject to following differentials:

Silicon: An additional charge of 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge of 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Metallurgical Coke

Price per Net Ton

Beehive Ovens

Connellsville, furnace	$12.00-$14.00
Connellsville, foundry	14.00- 16.25
New River, foundry	15.50
Wise county, foundry	14.25
Wise county, furnace	13.50

Oven Foundry Coke

Kearney, N. J., ovens	$20.50
Chicago, outside del.	19.50
Chicago, del.	20.75
Terre Haute, ovens	20.25
Milwaukee, ovens	20.25
New England, del.	21.75
Birmingham, del.	16.71
Indianapolis, ovens	19.50
Cincinnati, del.	20.50
Ironton, O., ovens	18.25
Erie, Pa., del.	21.55
Painesville, O., ovens	20.00
Cleveland, del.	21.55
Buffalo, del.	22.20
Detroit, del.	20.75
Philadelphia, ovens	19.55
Swedeland, Pa., ovens	19.50
Portsmouth, O., ovens	18.25

Coal Chemicals

Spot, cents per gallon

Pure and 90% benzol	21.00†
Toluol, two degrees	28.00
Industrial xylol	28.00
Solvent naphtha	28.00

Per pound fob works

Phenol (car lots, returnable drums)	13.00
Do., less than carlots	13.75
Do., tank cars	12.00

Eastern plants, per pound

Naphthalene flakes, balls, bbl. to jobbers, "household use"	12.00

Per ton, bulk, fob plants

Sulphate of ammonia	$40.00

† Freight allowed up to 2 cents.

Refractories

Net Prices

Per 1000, fob shipping point

Fire Clay Brick

Super Duty

Pa., Mo., Ky.	$92.00

High Heat Duty

Pa., Mo., Ky.	73.00
Ala., Ga.	73.00
N. J.	78.00

Intermediate Heat Duty

Ohio	67.00
Pa., Mo., Ky.	67.00
Ala., Ga.	59.00
N. J.	70.00

Low-Heat Duty

Pa., Md., Ohio	59.00

Ladle Brick

(Pa., O., Va., Mo.)

Dry Press	50.00
Wire Cut	48.00

Malleable Bung Brick

All bases	83.00

Silica Brick

Pennsylvania	73.00
Joliet, E. Chicago	82.00
Birmingham, Ala.	73.00

Basic Brick

Net tons, fob Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	64.00
Chem. bonded chrome	64.00
Magnesite brick	86.00
Chem. bonded magnesite	75.00

Magnesite

Domestic dead-burned grains, net ton, fob Chewelah, Wash.

Bulk	27.00
Single bags	31.50

Dolomite

Domestic, dead-burned, bulk, net tons, fob Bilmeyer, Blue Bell or Williams, Pa., Millville, W. Va., Nario, Millersville, Martin, Gibsonburg or Woodville, O., $11.85; Midwest (fob Thornton or McCook, Ill.), add $0.10; Missouri Valley (fob Dolly Siding, and Bonne Terre Mo.), add $0.20.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural) Lower Lake Ports

(Any increase or decrease in R. R. freight rates, dock handling charges and taxes thereon effective after Apr. 1, 1948, are for buyer's account.)

Old range bessemer	$6.60
Old range nonbessemer	6.45
Mesabi bessemer	6.35
Mesabi nonbessemer	6.20
High phosphorus	6.20

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56.62% contract	15.25

Foreign Ore

Cents per unit, cif Atlantic ports

No. African low phos.	Nom.
Swedish basic, 60 to 68%	13.50-14.00
Spanish, No. African basic, 50 to 60%	Nom.
Brazil iron ore, 68-69% fob Rio de Janeiro, nom.	5.50-6.50

Tungsten Ore

Wolframite and scheelite per short ton unit, duty paid	$26-$28

Manganese Ore

48-50%, duty paid, fob cars, New York, Philadelphia, Baltimore, Norfolk, Va., Mobile, Ala., New Orleans, 67.60c-72.60c.

Chrome Ore

Gross ton fob cars, New York, Philadelphia, Baltimore, Charleston, S.C., plus ocean freight differential for delivery to Portland, Oreg., and/or Tacoma, Wash. (S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African	
48% 2.8:1	$37.50
48% 3:1	39.00
48% no ratio	31.00
South African (Transvaal)	
44% no ratio	$25.50-$26.00
45% no ratio	26.50
48% no ratio	29.00-30.00
50% no ratio	29.50-30.50
Brazilian—nominal	
44% to 2.5:1 lump	$33.65
Rhodesian	
45% no ratio	$27-$27.50
48% no ratio	30.00
48% 3:1 lump	39.00
Domestic (seller's nearest rail)	
48% 3:1	$39.00

Molybdenum

Sulphide conc., lb., Mo., cont., Mines	$0.75

Fluorspar

Metallurical grade, fob shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $35; less than 60% $32.

HIGH STRENGTH—LOW-ALLOY STEELS

Prices in dollars per 100 pounds

	Pittsburgh	Chicago	Gary	Youngstown	Sparrows Point	Buffalo	Cleveland	Bethlehem	Canton Massillon
Sheet, Hot-Rolled	4.20	4.20–4.30	4.20–4.30	4.20–4.30	4.30	4.30	4.20	...	...
Cold-Rolled	5.20	5.20–5.30	5.20–5.30	5.20–5.30	...	5.30	5.20	...	...
Galvanized	5.90	.....	.....	.....	...	6.00	...	...	...
Strip, Hot-Rolled	4.20	4.30	4.20–4.30	4.20–4.30	...	...	4.20	...	...
Cold-Rolled	5.20	5.30†	5.30†	5.30	...	...	5.20	...	...
Shapes, Structural	4.20	4.20–4.30	4.20	4.30	...	...	...	4.30	...
Plates	4.45	4.45–4.55	4.45–4.55	.....	4.55	...	...	...	...
Bars, Small Shapes	4.35	4.35–4.45	4.35–4.45	4.35–4.45	...	4.45	...	...	4.45

† Nax High Tensile, produced by Great Lakes Steel Corp., quoted 10 cents higher.

WAREHOUSE STEEL PRICES

Prices, cents per pound, for delivery within switching limits, subject to extras. Revisions are pending to reflect recent changes in mill prices and increases in freight rates.

	SHEETS					STRIP		BARS				PLATES	
	H-R 10G	C-R 10G	C-R 17G	Gal. *10G	Gal. *24G	†H-R	†C-R	H-R Rds. ⅝" to 3"	C-F Rds. ½"& up	H-R Alloy (**4140)	Structural Shapes	Carbon ⅜"-¾"	Floor ⅜" & Thicker
Boston (city)	5.03	6.09[4]	5.79[4]	6.23[4]	7.58[4]	5.61	6.87	5.04	5.88	7.64	4.91	5.18	6.88
New York (city)	4.96	6.16	5.86	6.16	7.51	5.59	...	5.06	5.63	7.23	4.80	5.11	6.78
New York (country)	4.81	6.01	5.71	6.01	7.36	5.44	...	4.91	...	...	4.65	4.96	6.63
Philadelphia (city)	4.70	6.32	5.92	5.90	7.25	5.32	5.72	4.87	5.75	8.77	4.57	4.85	6.47
Philadelphia (country)	4.55	6.18	5.78	5.75	7.10	5.17	5.57	4.73	...	...	4.47	4.71	6.32
Baltimore (city)	4.32†	5.95	5.65	5.72	7.07	4.80	...	4.85	5.71	...	4.71	4.77	6.39
Baltimore (country)	4.17†	5.80	5.50	5.50	6.85	4.65	...	4.70	...	...	4.56	4.62	6.15
Washington (city)	4.81	...	...	...	...	5.08	...	5.14	5.79[13]	...	4.98	5.03	6.60
Washington (country)	4.71	...	...	...	...	4.98	...	5.04	...	...	4.88	4.93	6.50
Norfolk, Va.	4.90	...	...	...	...	...	...	5.20	6.00	...	5.15	5.15	6.90
Memphis, Tenn. (city)	4.82[20]‡‖	5.87[20]†	...	6.37	...	5.02[20]	...	4.97[20]	5.87	...	4.97[20]	5.17[20]	6.87[20]
Memphis, Tenn. (country)	4.72[20]‡‖	5.77[20]†	...	6.27	...	4.92[20]	...	4.87[20]	5.77	...	4.87[20]	5.07[20]	6.77[20]
Buffalo (city)	4.45	...	5.20[8]	6.05	...	5.25	5.65	4.40	5.10	6.85	4.40	5.00	6.25
Buffalo (country)	4.30	...	5.05[8]	5.50	...	4.70	5.50	4.25	4.95	6.85	4.25	4.45	5.75
Pittsburgh (city)	4.25‡‖	...	5.10[8]†	5.65	6.90	4.35	5.35	4.40	5.10	6.85	4.40	4.60	5.90
Pittsburgh (country)	4.10‡‖	...	4.95[8]†	5.50	6.75	4.20	5.20	4.25	4.95	6.85	4.25	4.45	5.75
Cleveland (city)	4.45	5.50[8]	5.20[8]	5.82	7.17	4.55	5.35	4.40	5.10	7.26	4.70	4.60	6.05
Cleveland (country)	4.30	5.35[8]	5.05[8]	...	...	...	5.20	4.25	4.95	...	...	4.45	5.90
Cincinnati	4.56	...	5.22	5.77	...	4.77	...	4.78	5.63	...	4.82	4.98	6.47
Detroit	4.55	...	5.30	...	...	4.72	5.63	4.50	5.22	7.10	4.77	4.88	6.28
Indianapolis	4.55	5.32[8]	...	5.87	7.12	4.65	5.90	4.70‡‡	5.40	8.85	4.70	4.90	6.35
Chicago (city)	4.45	5.50[8]	5.20[8]	5.65	6.90	4.35	5.45	4.40	5.10	6.85[9]	4.40	4.60	6.05
Chicago (country)	4.30	5.35[8]	5.05[8]	5.50	6.75	4.20	5.30	4.25	4.95	6.85[9]	4.25	4.45	5.90
Milwaukee	4.658	5.708[8]	5.408[8]	5.858	7.108	4.558	5.658	4.608	5.308	7.208[9]	4.608	4.808	6.258
St. Louis	4.78	5.83[8]	5.53[8]	6.02	7.27	4.68	5.82	4.73	5.47[12]	...	4.73	4.93	6.38
Birmingham (city)	4.45[20]‡‖	...	...	5.65	...	4.45[20]	...	4.40[20]	5.93[12]	...	4.40	4.65	6.86
Birmingham (country)	4.30[20]‡‖	...	...	5.50	...	4.30[20]	...	4.25[20]	...	...	4.25	4.50	...
New Orleans	4.98[20]**	...	6.29[18]	...	...	5.18[20]	...	5.13[20]††	6.29[11]	...	5.03[20]††	5.33[20]	7.29[20]
Omaha, Nebr.	5.462	...	...	6.712	8.012	5.362	...	5.412	6.112	7.562	5.412	5.612	7.062
Houston, Tex.	5.75	...	...	7.36	8.10	6.00	...	5.35	7.00[12]	...	5.85	5.85	6.50
Los Angeles (city)	5.75	7.75[8]	7.45[8]	7.40	8.80	6.05	8.70	5.50	7.35[22]	9.35[10]	5.35	5.55	7.65
Los Angeles (country)	5.60	7.60[8]	7.30[8]	7.25	8.65	5.90	8.55	5.35	7.20[1]	9.20[10]	5.20	5.40	7.50
San Francisco	5.40[21]	6.65[8]	...	7.05[8]	7.95[8]	5.75[21]	8.70[16]	5.05[21]	7.00[12]	...	5.30[21]	5.50[21]	7.10[21]
Seattle, Tacoma, Wash.	5.30[17]‡‖	...	7.10[8]‡	6.95	...	5.60[17]	...	5.45[17]	7.45[19]	8.50[13]	5.25[17]	5.55[17]	7.65[17]
Portland, Oreg.	5.30[17]‡‖	...	7.10[8]‡	6.70	...	5.60[17]	...	5.45[17]	7.45[19]	...	5.25[17]	5.45[17]	7.55[17]

Base Quantities: 400 to 1999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold finished bars, 1000 lb and over; galvanized sheets, 450 to 1499 lb; [1]—1500 lb and over; [2]—1000 to 4999 lb; [4]—three to 24 bundles; [6]—450 to 1499 lb; [8]—400 to 1499 lb; [9]—1000 to 1999 lb; [11]—1000 to 39,999 lb; [12]—1000 lb and over; [16]—2000 lb and over; [17]—300 to 9999 lb; [18]—1500 to 1999 lb; [19]—1500 to 39,999 lb; [20]—400 to 3999 lb; [21]—400 lb and over; [22]—500 to 1499 lb.

* Includes gage and coating extra, except Birmingham (coating extra excluded); † does not include gage extras; ‡ 15 gage; ** as rolled; †† add 0.40 for sizes not rolled in Birmingham; ‡‡ add 15c per 100 lb for slow moving items; ‡‖ 18 gage and heavier.

PRICES OF LEADING FERROALLOYS PRODUCTS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $52, Palmerton, Pa., $51, Pittsburgh, 16% to 19% Mn., $51 Palmerton, $50, Pittsburgh.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.). Carload, lump, bulk $145 per gross ton of alloy, carload packed $157, ton lot $172, less ton $189; fob New Orleans, Mobile, Philadelphia, Baltimore, or New York. Carload, lump, bulk $151, fob cars Pittsburgh, including 50c switching charge. Add, or subtract, $1.80 for each 1%, or fraction thereof, of contained manganese over 82% or under 78%. **West Coast Prices:** Carload (80,000 lb or more), lump, bulk, same price and basing points as above. All other prices for shipment from Pacific Coast warehouses, add $26.21 to above prices. Delivery is fob Portland, Los Angeles, South San Francisco, or Seattle warehouses, with railroad freight allowed on shipments of 25 gross tons or more.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Eastern Zone, carload, lump, bulk, max. 0.10% C, 22.5c per lb of contained Mn, carload packed 23.25c, ton lot 24.35c, less ton 25.55c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.7c for c.l. and 4.4c for l.c.l. Freight allowed. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 0.75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Eastern Zone, carload, lump, bulk 16.5c per lb of contained Mn, carload packed 17.25c, ton lot 18.35c, less ton 19.55c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.7c for c.l. and 4.4c for l.c.l. Freight allowed. Spot, add 0.25c.

Manganese Metal: (Mn 96% min., Fe 2% max., Si 1% max., C 0.20% max.). Eastern Zone, carload, 2" x D, bulk 32c per lb of metal, carload packed 32.5c, ton lot 34c, less ton 36c; Central, add 1c for c.l. and 1.45c for l.c.l.; Western, add 1.45c for c.l. and 2.4c for l.c.l. Freight allowed. Spot, add 2c.

Silicomanganese: (Mn 65-70%). Eastern Zone, contract, lump, bulk, 1.50% C grade, 17-20% Si, 7.8c per lb of alloy, carload packed, 8.55c, ton lot 9.45c, less ton 10.45; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. For 2.0% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Eastern Zone, contract, c.l., lump, bulk 18.6c per lb of contained Cr, c.l., packed 19.5c, ton lot 20.65c, less ton 22.05c; Central, add 0.4c for c.l. and 1.3c for l.c.l.; Western, add 0.55c for c.l. and 2.1c for l.c.l. Freight allowed. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Eastern Zone, contract, c.l., 8MxD, bulk 20.1c per lb of contained Cr, c.l., packed 21.0c, ton lot 22.35c, less ton 24.1c; Central, add 0.4c for c.l. and 1.3c for l.c.l.; Western, add 0.55c for c.l. and 2.1c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Eastern Zone, contract, carload, lump, bulk, max. 0.03% C 28.5c per lb of contained Cr, 0.04% C 27.5c, 0.05% C 27.0c, 0.06% C 26.5c, 0.10% C 26.0c, 0.15% C 25.5c, 0.20% C 25.25c, 0.50% C 25.0c, 1% C 24.5c, 2% C 24.25c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c; Central, add 0.4c for c.l. and 0.65c for l.c.l.; Western, add 0.5c for c.l. and 1.85c for l.c.l. Freight allowed. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, add C 1.25% max.). Eastern Zone, contract, carload, lump, bulk 25c per lb of contained chromium, carload, packed 26.1c, ton lot 27.3c, less ton 29.1c; Central, add 0.4c for c.l. and 0.65c for l.c.l.; Western, add 0.5c for c.l. and 1.85c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 2c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 2c for each 0.25% of N above 0.75%.

Chromium Metal: (Mn. 97% Cr and 1% Fe). Eastern Zone, contract, carload, 1" x D, packed, max. 0.50% C grade, 93c per lb of contained chromium, ton lot 94.5c, less ton 97c; Central, add 1.5c for c.l. and 2.5c for l.c.l.; Western, add 2.75c for c.l. and 4.5c for l.c.l. Freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 9.3c per lb of contained Si, carload packed 10.9c, ton lot 12.35c, less ton 14.0c; Central, add 0.5c for c.l. and 1.25c for l.c.l.; Western, add 0.7c for c.l. and 1.8c for l.c.l. Freight allowed. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (All 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 11.8c per lb of contained Si carload packed 13.1c, ton lot 14.25c, less ton 15.5c; Central, add 0.3c for c.l. add 0.75c for l.c.l.; Western, add 1.05c for c.l. and 5c for l.c.l. Freight allowed. Spot, add 0.3c.

85% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk 13.3c per lb of contained Si, carload packed 14.55c, ton lot 15.55c, less ton 16.7c; Central, add 0.3c for c.l. and 0.7c for l.c.l.; Western, add 1.05c for c.l. and 4.4c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90% Ferrosilicon: Eastern Zone, contract, carload, lump, bulk, 15c per lb of contained Si carload packed 16.2c, ton lot 17.15c, less ton 18.2c; Central, add 0.3c for c.l. and 0.65c for l.c.l.; Western, add 1c for c.l. and 4c for l.c.l. Freight allowed. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Over 97% Si and 1% max. Fe.) Eastern Zone, c.l., lump, bulk, regular 17.3c per lb of Si, c.l. packed 18.5c, ton lot 19.4c, less ton 20.4c; Central, add 0.6c for c.l. and 2.25c for l.c.l.; Western, add 1.2c for c.l. and 4c for l.c.l. Add 1c for max. 0.20% calcium grade. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing over 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract basis fob Niagara Falls, N. Y., lump per lb cl 6.90c; ton lots packed, 7.40c; 200 to 1999 lb, 8.15c; smaller lots, 8.65c. Spot up 0.5c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Eastern Zone, contract, carload, bulk, 12.5c per lb or briquet, carload packed 13.2c, ton lot 14.0c, less ton 14.9c; Central, add 0.25c for c.l. and 0.9c for l.c.l.; Western, add 0.35c for c.l. and 1.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c.

(*Please turn to Page* 160)

Metal Markets Remain Firm

Actual price advances restricted to copper export and remelt aluminum markets. Continuation of controls over tin and antimony recommended

New York — A strong price undertone was maintained in nonferrous metal markets last week, although actual price advances were restricted to the copper export and remelt aluminum markets. Government officials indicated that tightness in critical materials will continue at least until well into 1949 and, in some instances, beyond.

Copper — Electrolytic copper sold last week on the basis of 22.12½c, fas New York, representing an advance of 1/8-cent over previous level. Some business was also done at 21.50c. Demand continued strong in the domestic market with some producers completely sold out for June delivery. Office of Metals Reserve held 14,649 tons of refined copper on Apr. 30 compared with 15,892 tons a month earlier.

Shipments of refined copper to domestic consumers declined 6513 tons in April to a total of 116,475 tons from 122,988 tons in March, according to the Copper Institute. Of April's shipments, 115,090 tons were made by industry sources and 1385 tons by the Office of Metals Reserve.

Production of crude copper from primary sources totaled 76,369 tons in April, an increase of 2718 tons over the March figure, while output from secondary sources rose 1608 tons to 11,866 tons. Production of refined copper held at a high rate, but showed a drop of 6822 tons from the March total to 104,044 tons.

Stocks of refined metal at the refineries as of Apr. 30 amounted to 67,257 tons, representing a further decline of 1325 tons. Stocks were at the lowest level since Nov. 30, 1947.

Zinc — Prospects that the government may soon enact legislation providing for metal subsidies have tended to counteract factors which were exerting an upward pressure on the zinc price structure. Some business was transacted in the export market at 13.75c, fas Gulf ports, for special high grade although the domestic market held at 13.00c to 13.25c for that grade. Prime western held at 12.00c, East St. Louis.

Lead — The House has passed the Knutson bill, HR 6489, which suspends the import duties on lead until June 30, 1949. The bill excludes from the tariff suspension the semifinished products contained in the original bill, HR 6375, which was submitted Apr. 28. The basic tariff on lead in bars and bullion is 2-1/8 cents per pound. However, in the reciprocal trade agreement negotiated with Mexico this was reduced to 1-1/16 cents with the proviso that it would be increased to 1-7/10 cents per pound at the end of the war emergency. The agreement also set a duty of ¾-cent a pound on the lead content of ores during the war with the proviso that the rate should be 1-2/10 cents a pound at the end of the war emergency.

Tin—Charles Sawyer, secretary of commerce, has recommended to Congress that controls over tin and antimony be extended to June 30, 1949. He expects that a balance between supply and demand of tin will not be reached until the middle of 1950. He said in part: "Our present estimates indicate that unrestricted demand in the United States would amount to 113,000 tons of primary and secondary tin in 1948, without taking into consideration the requirements of the Munitions Board strategic stockpile. Our present estimate of the U. S. primary and secondary tin supply in 1948 is just below 88,000 tons."

OMR had available for sale 27,956 tons of pig tin as of Apr. 30, or an increase of 1141 tons during the month and 11,600 tons since September, 1947.

Aluminum — Aluminum Co. of America plans to erect an aluminum-producing plant at Point Comfort, near Port Lavaca, Tex. The new plant will use natural gas for the generation of the large amounts of electric power required for aluminum production. Present plans indicate that the project will be completed in about two years. Alcoa installations at Point Comfort will include: A smelting or reduction plant with two potlines; a plant for manufacture of carbon electrodes; a power plant; and general service facilities.

Magnesium — Dow Chemical Co., Midland, Mich., has announced a new pricing system, effective as of May 17, on all new orders received for magnesium extrusions which is expected to result in an average price reduction of about 10 per cent and bring many extruded shapes in direct competition with aluminum. The new pricing system departs from the traditional form factor method to bring prices of various extruded sections more closely in line with actual production costs. While reductions of as much as 15 per cent will apply to some heavier sections in the more commonly used alloys, the company pointed out that less advantage would be apparent in the lighter and more complex shapes. Some extrusions in the lighter weight per foot range will hold at or somewhat above previous levels.

Restrictions on Use of Tin Plate for Cans Revised

Washington—Use of some tin plate in the manufacture of certain types of coffee cans is permitted now under provisions of the conservation order M-81, as amended by the Office of Domestic Commerce. The changes will not result in any additional overall use of tin and no increased allocations of tin for can making are contemplated.

The new specifications allow use of 0.25 pound tin plate in soldered or welded parts of all sizes of cans for packing soluble coffee, to assure moisture-proof seams. Blackplate still must be used for other parts.

Use of 0.25 pound tin plate in two-pound and larger sizes of cans for packing regular coffee also is authorized for the soldered and welded parts, with use of black plate still required for other parts. Coffee cans smaller than the two-pound size still must be made entirely from black plate.

Prompt Action on New Mine Subsidy Bill Is Expected

New York — Early Congressional action is expected on a bill sponsored by a House Public Lands Subcommittee which authorizes payments up to $80 million a year to subsidize marginal mining operations. Sponsors said they believed they had met practically all objections voiced by President Truman when he vetoed a similar bill last year.

The subsidy plan covers more than 40 minerals and all of those which the Army-Navy Munitions Board determines are needed for stockpiling purposes. Representative Russell, who introduced a similar bill last year, estimates that about two-thirds of the $80 million will go for copper, lead and zinc. Premiums on these three metals expired last June 30. The new bill provides funds to develop and explore new fields as well as for production subsidies.

The bill provides, in part:

Purchases would be made of all metals listed on the Munition Board's "A List" of strategic and critical minerals, except those metals which the Board announces within 30 days of the act's passage are not needed for stockpiling. Purchases of any other metal can be discontinued a year after a Board finding that it is no longer needed.

All payments for these metals will be designed to cover all costs plus depreciation, amortization, depletion and a "reasonable profit."

In the case of copper, lead and zinc, the ceiling payments will be an amount equal to the highest market price plus the highest production premiums received by a domestic producer during the years 1942 through 1946, plus an adjustment to take into account any increase in the Bureau of Labor Statistics' wholesale price index since these highest sums were paid.

For all other metals, the ceiling will be an amount equal to the highest amount paid any domestic producer for such metals during the years 1942 through 1946 by the Reconstruction Finance Corp. or any other government agency, plus an amount reflecting the increases in the BLS index since that date.

All ceilings will be readjusted periodically to take into account any 5-point change in the BLS wholesale commodity price index.

All ores, concentrates, metals and minerals on which payments are made must meet minimum specifications laid down by the Munitions Board for the stockpile.

Expiration of the bill is June 30, 1952.

NONFERROUS METAL PRICES

(Cents per pound, carlots, except as otherwise noted)

Copper: Electrolytic, 21.50c, Conn. Valley; Lake, 21.62½c Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 19.00-19.25c; 88-10-2 (No. 215) 28.00c; 80-10-10 (No. 305) 24.25c; No. 1 yellow (No. 405) 15.25-16.00c. Prices include 25 cents per 100 lb freight allowance.

Zinc: Prime western 12.00c, brass special 12.25c, intermediate 12.50c, East St. Louis; high grade 13.00c, delivered.

Lead: Common 17.30-17.35c; chemical and corroding 17.40c St. Louis.

Primary Aluminum: 99% plus, ingots 15.00c, pigs 14.00c; metallurgical 94% min. 13.50c. Base prices for 10,000 lb and over, fob shipping point, freight allowed.

Secondary Aluminum: Piston alloy (No. 122 type) 19.50-19.75c; No. 12 foundry alloy (No. 2 grade) 19.00-19.25c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 20.00-20.75c; grade 2 19.25-19.75c; grade 3, 19.00-19.50c; grade 4 18.50-19.00c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over, 20.50c, fob Freeport, Tex.

Tin: Grade A, 99.8% or higher (including Straits) 94.00c; grade B, 99.8% or higher, not meeting specifications for grade A, with 0.05% max. arsenic, 93.85c; grade C, 99.65-99.79%, incl., 93.50c; 99.5-99.64% 93.50c grade F, 98-98.99% 92.60c for tin content. Prices are ex-dock, New York, in 5-ton lots.

Antimony: American, 99-99.8% and over but not meeting specifications below, 33.00c; 99.8% and over (arsenic 0.05% max.; other impurities, 0.1% max.) 33.50c, fob Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 33.75c; 25-lb pigs, 35.25c; shot, 36.25c; "F" nickel shot or ingots, for addition to cast iron, 34.25c. Prices include import duty.

Mercury: Open market, spot, New York $74-$76 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $20.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $1.75, del.; Special or patented shapes, $1.80.

Cobalt: 97-98%, $1.65 per lb for 550 lb (keg); $1.67 per lb for 100 lb (case); $1.72 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 74.62½c per ounce.

Platinum: $98-$101 per ounce.

Palladium: $24 per troy ounce.

Iridium: $110-$120 per troy ounce.

Plating Materials

Chromic Acid: 99.9%, flake, fob Philadelphia, carloads, 22.00c; 5 tons and over 22.50c; 1 to 5 tons, 23.00c; less than 1 ton, 23.50c.

Copper Anodes: Base, 2000 to 5000 lb; fob shipping point, freight allowed: Flat untrimmed, 30.59c; oval, 30.09c; electrodeposited, 29.84c; cast, 29.59c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 44.00c, fob Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 15.00c; 1000 to 19,900 lb, 14.00c fob Niagara Falls, N. Y.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 250 lb, 25.00c; over 250 lb, 24.00c, fob Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 48.00c; 10,000 to 30,000 lb, 49.00c; 3000 to 10,000 lb, 50.00c; 500 to 3000 lb, 51.00c; 100 to 500 lb, 53.00c; under 100 lb, 56.00c; fob Cleveland. Add 1 cent for rolled depolarized.

Nickel Chloride: 100-lb kegs, 23.50c; 275-lb, or 500-lb bbls. 21.50c, fob Cleveland.

Tin Anodes: Bar, 1000 lb and over 110.00c; 500 to 999 lb, 110.50c; 200 to 499 lb, 111.00c; less than 200 lb, 112.50c; ball, 1000 lb and over, 112.25c; 500 to 999 lb. 112.75c; 200 to 499 lb, 113.25c; less than 200 lb, 114.75c, fob Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers and resellers, 67.4c; 100 or 300 lb drums only, 100 to 500 lb, to consumers 59.2c, to resellers 54.8c; 600 to 1900 lb, to consumers 56.8c, to resellers 52.5c; 2000 to 9900 lb, to consumers 55.0c, to resellers 50.9c; 10,000 lb or more l.c.l., to consumers 53.9c, to resellers 49.9c; carloads, to consumers 52.7c, to resellers 48.7c. Prices fob Sewaren, N. J.

Zinc Cyanide: 100-lb drums 37.25c, fob Cleveland; 37.00c, Detroit; 36.00c, fob Philadelphia.

Potassium Stannate: 350 to 1050 lb, 65.00c; 1400 to 2100 lb, 62.50c; 2450 lb and more, 61.50c.

Stannous Sulphate: Less than 2000 lb, in 100 lb kegs, 96.50c, in 400 lb bbl, 95.50c; more than 2000 lb, in 100 lb kegs, 95.50c, in 400 lb bbl, 94.50c.

Stannous Chloride (anhydrous): 400 lb-bbls, 89.00c; 100-lb kegs, 90.00c per lb.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, fob mill.)

Sheet: Copper 33.68c; yellow brass 30.16c; commercial bronze, 95% 33.80c, 90% 33.27c; red brass, 85% 32.23c, 80% 31.70c; best quality 31.09c; Everdur, Duronze, Herculoy or equiv., hot-rolled, 38.56c; nickel silver, 18%, 42.42c; phosphor bronze, grade A, 5%, 52.70c.

Rods: Copper, hot rolled 30.03c, cold drawn 31.03c; yellow brass, free cutting, 24.69c; commercial bronze, 95% 33.49c, 90% 32.96c; red brass, 85% 31.92c, 80% 31.39c.

Seamless Tubing: Copper 33.72c; yellow brass 32.92c; commercial bronze 90% 35.68c; red brass 85% 34.89c, 80% 34.36c.

Wire: Yellow brass 30.45c; commercial bronze, 95% 34.09c, 90% 33.56c; red brass, 85% 32.52c, 80% 31.99c; best quality brass 31.38c.

Copper Wire: Bare, soft, fob eastern mills, c.l. 26.80c, l.c.l. 27.30c; weatherproof, fob eastern mills, c.l. 27.35c, l.c.l. 27.85c; magnet, delivered, c.l. 29.75c-31.13c, 15,000 lb or more 30.00c-31.38c, l.c.l. 30.50c-31.88c.

ALUMINUM

(Base prices, fob shipping point)

Sheets and Circles: 2s and 3s mill finish c.l., fob shipping point.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	24.0	...	...
0.135-0.126	12-48	24.5	...	...
0.125-0.096	12-48	24.5	23.1	26.3
0.095-0.077	12-48	25.0	23.2	26.5
0.076-0.061	12-48	25.5	23.4	26.7
0.060-0.048	12-48	25.7	23.6	27.0
0.047-0.038	12-48	26.1	23.8	27.3
0.037-0.030	12-48	26.4	24.1	27.7
0.029-0.024	12-48	26.8	24.4	28.1
0.023-0.019	12-36	27.4	24.8	28.6
0.018-0.017	12-36	27.9	25.3	29.3
0.016-0.015	12-36	28.6	25.9	30.1
0.014	12-24	29.4	26.6	31.1
0.013-0.012	12-24	30.2	27.3	32.0
0.011	12-24	31.1	28.1	33.1
0.010-0.0095	12-24	32.1	29.0	34.3
0.009-0.0085	12-20	33.2	30.0	35.7
0.008-0.0075	12-20	34.4	31.1	37.1
0.007	12-18	35.7	32.3	38.8
0.006	12-18	37.0	33.5	42.6

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

LEAD

(Prices to jobbers, fob Cleveland, Pittsburgh)

Sheets: Full rolls, 140 sq ft or more, $20.85 per cwt.; add 50c per cwt., 10 sq ft to 140 sq ft; $1.25, less than 10 sq ft; $1, circles and segments. Pipe: Full coils, $20.10 per cwt; cut coils, $20.35. Traps and Bends: List price plus 52%.

ZINC

Sheets, 16.50c-17.00c, fob mill, 36,000 lb and over. Ribbon zinc in coils, 15.25c-16.00c, fob mill, 36,000 lb and over. Plates, not over 12-in., 14.25c; over 12-in., 15.25c.

NICKEL

(Base prices, fob mill.)

Sheets, cold-rolled, 54.00c. Strip, cold-rolled, 60.00c Rods, hot-rolled 50.00c, cold-finished 55.00c. Angles, hot-rolled, 50.00c. Plates, 52.00c. Seamless tubes, 83.00c.

MONEL

(Base prices, fob mill.)

Sheets, cold-rolled 43.00c; No. 35, 41.00c. Strip, cold-rolled, 44.00c. Rods, hot-rolled 39.00c; cold-finished 44.00c. Angles, hot-rolled, 39.00c. Plates, 41.00c. Seamless tubes, 71.00c. Shot and blocks, 31.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.312 in. in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 lb to 4000 lb. 35.00-36.00c.

Scrap Metals

BRASS MILL ALLOWANCES

(Based on 21.50c, Conn., for copper)

Prices in cents per pound for less than 15,000 lb fob shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	19.125	19.125	18.375
Yellow brass	15.625	15.375	14.750
Commercial Bronze			
95%	18.125	17.875	17.375
90%	17.625	17.375	16.875
Red brass			
85%	17.500	17.250	16.750
80%	17.250	17.000	16.500
Best Quality (71-79%)	16.625	16.375	15.875
Muntz Metal	14.750	14.500	14.000
Nickel silver, 5%	16.500	16.250	8.250
Phos. bronze, A. B.	20.750	20.500	19.500
Naval brass	15.250	15.000	14.500
Manganese bronze	15.250	15.000	14.375

BRASS INGOT MAKERS BUYING PRICES

(Cents per pound, fob shipping point, carload lots)

No. 1 copper 18.25, No. 2 copper 17.25, light copper 16.25, composition red brass 14.50-14.75, auto radiators 11.75-12.00, heavy yellow brass 10.50-10.75, brass pipe, 11.50-11.75.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 18.75, No. 2 copper 17.75, light copper, 16.75, refinery brass (60% copper), per dry copper content 16.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots or more)

Copper and Brass: Heavy copper and wire No. 1 16.50-16.75, No. 2 15.50-16.00, light copper 14.50-14.75, No. 1 composition red brass 12.75-13.00, No. 1 composition turnings 12.25-12.50, mixed brass turnings 7.25-7.50, new brass clippings 12.50-13.00, No. 1 brass rod turnings 10.00-10.50, light brass 6.50-7.00, heavy yellow brass 9.00-9.25, new brass rod ends 10.50-11.00, auto radiators, unsweated 10.00-10.25, cocks and faucets 10.00-10.25, brass pipe 10.00-10.25.

Lead: Heavy 15.00-15.25, battery plates 9.50-9.75, linotype and stereotype 16.00-16.50, electrotype 13.50-14.00, mixed babbitt 14.25-14.75, solder joints, 17.25-17.75.

Zinc: Old zinc 5.75-6.00, new die cast scrap 4.75-5.25, old die cast scrap 2.75-3.25.

Tin: No. 1 pewter 60.00-62.00, block tin pipe 77.00-78.00, auto babbitt 46.50-47.00, No. 1 babbitt 46.50-48.00, siphon tops 45.00-47.00.

Aluminum: Clippings 2S 10.00-10.50, old sheets 8.00-8.50, crankcases 8.00-8.50, borings and turnings 3.25-3.75, pistons, free of struts, 8.00-8.50.

Nickel: Anodes 16.00-17.00, turnings 12.50-13.00, rod ends 16.00-17.00.

Monel: Clippings 12.00-12.50, turnings 7.00-7.25, old sheets 10.00-10.50, rods 10.00-10.50 castings 9.00.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
March Avg.	21.500	14.825	12.000	94.000	15.000	33.000	33.750	74.625
April Avg.	21.500	17.037	12.000	94.000	15.000	33.000	33.750	74.625
May 1-20	21.500	17.30-17.35	12.000	94.000	15.000	33.000	33.750	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum, primary ingots, 99%, del.; Antimony, bulk, fob Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

PITTSBURGH

No. 1 Heavy Melt. Steel	$40.00-40.50*
No. 2 Heavy Melt. Steel	40.00-40.50*
No. 1 Busheling	40.00-40.50*
Nos. 1, 2 & 3 Bundles	40.00-40.50*
Machine Shop Turnings	36.00-36.50
Mixed Borings, Turnings	36.00-36.50
Short Shovel Turnings	36.50-37.50
Cast Iron Borings	36.00-37.00
Bar Crops and Plate	47.50-48.00
Low Phos. Steel	47.50-48.00
Heavy Turnings	39.50-40.00

Cast Iron Grades

No. 1 Cupola	64.00-65.00
Charging Box Cast	53.00-54.00
Heavy Breakable Cast	56.00-58.00
Unstripped Motor Blocks	52.00-53.00
Malleable	69.00-70.00
Brake Shoe	52.00-53.00
Clean Auto Cast	58.00-59.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	41.00-41.50
R.R. Malleable	75.00-80.00
Axles	51.50-52.00
Rails, Rerolling	56.00-58.00
Rails, Random Lengths	54.00-56.00
Rails, 3 ft and under	61.50-62.00
Rails, 18 in. and under	62.50-63.50
Railroad Specialties	54.00-55.00
Uncut Tires	52.00-52.50
Angles, Splice Bars	53.00-54.00

* Plus applicable freight springboard.

CLEVELAND

No. 1 Heavy Melt. Steel	$39.50-40.00*
No. 2 Heavy Melt. Steel	39.50-40.00*
No. 1 Busheling	39.50-40.00*
Nos. 1 & 2 Bundles	39.50-40.00*
Machine Shop Turnings	34.50-35.00
Mixed Borings, Turnings	34.00-36.00
Short Shovel Turnings	35.50-36.00
Cast Iron Borings	35.50-36.00
Bar Crops and Plate	44.50-45.00
Punchings & Plate Scrap	44.50-45.00
Heavy Turnings	39.50-40.50
Alloy Free Turnings	37.50-38.50
Cut Structurals	46.00-49.00

Cast Iron Grades

No. 1 Cupola	67.00-69.00
Charging Box Cast	58.00-60.00
Stove Plate	58.00-60.00
Heavy Breakable Cast	54.00-56.00
Unstripped Motor Blocks	58.00-60.00
Malleable	73.00-75.00
Brake Shoes	52.00-53.00
Clean Auto Cast	68.00-70.00
No. 1 Wheels	58.00-60.00
Burnt Cast	56.00-57.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.50-41.50*
R.R. Malleable	73.00-78.00
Rails, Rerolling	57.00-58.00
Rails, Random Lengths	56.00-57.00
Rails, 3 ft and under	61.00-63.00
Cast Steel	56.00-58.00
Railroad Specialties	53.00-55.00
Uncut Tires	56.00-57.00
Angles, Splice Bars	57.00-59.00

* Plus applicable freight springboard.

VALLEY

No. 1 Heavy Melt. Steel	$40.00-40.50*
No. 2 Heavy Melt. Steel	40.00-40.50*
No. 1 Bundles	40.00-40.50*
Machine Shop Turnings	34.50-35.50
Short Shovel Turnings	36.50-37.00
Cast Iron Borings	36.00-36.50
Low Phos.	46.00-47.50*

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.50-41.50*

* Plus applicable freight springboard.

MANSFIELD

Machine Shop Turnings	$35.00-35.50
Short Shovel Turnings	37.00-37.50

CINCINNATI

No. 1 Heavy Melt. Steel	$39.50
No. 2 Heavy Melt. Steel	39.50
No. 1 Busheling	39.50
Nos. 1 & 2 Bundles	39.50
Machine Shop Turnings	33.50
Mixed Borings, Turnings	32.50
Short Shovel Turnings	35.50
Cast Iron Borings	34.50

Cast Iron Grades

No. 1 Cupola Cast	55.00
Charging Box Cast	43.00
Heavy Breakable Cast	50.00
Stove Plate	47.00
Unstripped Motor Blocks	45.00
Brake Shoes	45.00
Clean Auto Cast	55.00
Drop Broken Cast	60.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.50
R.R. Malleable	68.00
Rails, Rerolling	53.00
Rails, Random Lengths	50.00
Rails, 18 in. and under	60.00

DETROIT

(Dealers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$35.00-35.50
No. 1 Busheling	35.00-35.50
Nos. 1 & 2 Bundles	35.00-35.50
No. 3 Bundles	35.00-35.50
Machine Shop Turnings	29.00-29.50
Mixed Borings, Turnings	29.00-29.50
Short Shovel Turnings	30.00-30.50
Cast Iron Borings	30.00-30.50
Punchings & Plate Scrap	40.00-40.50

Cast Iron Grades

No. 1 Cupola Cast	58.00-60.00
Heavy Breakable Cast	48.00-50.00
Clean Auto Cast	60.00-62.00

BUFFALO

No. 1 Heavy Melt. Steel	$43.00-45.00
No. 2 Heavy Melt. Steel	39.75-40.25
No. 1 Busheling	39.75-40.25
No. 1 & 2 Bundles	39.75-40.25
Machine Shop Turnings	34.75-35.25
Mixed Borings, Turnings	34.75-35.25
Cast Iron Borings	35.50-36.00
Short Shovel Turnings	35.50-36.00
Low Phos.	46.00-47.00

Cast Iron Grades

No. 1 Cupola	66.00-67.00
Mixed Cupola	63.00-65.00
Heavy Breakable Cast	55.00-57.00
Malleable	70.00-75.00
Clean Auto Cast	62.00-64.00

Railroad Scrap

Rails, 3 ft. and under	56.00-58.00
Railroad Specialties	52.00-53.00

PHILADELPHIA

No. 1 Heavy Melt. Steel	$42.00-43.00
No. 2 Heavy Melt. Steel	39.00
No. 1 Busheling	39.00
Nos. 1 & 2 Bundles	39.00
No. 3 Bundles	37.00
Machine Shop Turnings	34.00-35.00
Mixed Borings, Turnings	34.00-35.00
Short Shovel Turnings	34.00-35.00
Bar Crop and Plate	46.50-47.50
Punchings & Plate Scrap	46.50-47.50
Cut Structurals	46.50-47.50
Elec. Furnace Bundles	43.50-44.50
Heavy Turnings	42.50-43.00
No. 1 Chemical Borings	42.00-43.00

Cast Iron Grades

No. 1 Cupola Cast	63.00-65.00
No. 1 Machinery Cast	66.00-67.00
Charging Box Cast	61.50-62.50
Heavy Breakable Cast	61.50-62.50
Unstripped Motor Blocks	59.50
Malleable	76.00-78.00
Clean Auto Cast	64.00
No. 1 Wheels	68.00-70.00

NEW YORK

(Brokers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$34.50
No. 2 Heavy Melt. Steel	34.50
No. 1 Busheling	34.50
Nos. 1 & 2 Bundles	34.50
No. 3 Bundles	32.50
Machine Shop Turnings	28.50-29.00
Mixed Borings, Turnings	28.50-29.00
Short Shovel Turnings	30.50-31.00
Punchings & Plate Scrap	40.00-41.00
Cut Structurals	40.00-41.00
Elec. Furnace Bundles	40.00-41.00

Cast Iron Grades

No. 1 Cupola Cast	55.00-57.00
Charging Box Cast	56.00-58.00
Heavy Breakable	56.00-58.00
Unstripped Motor Blocks	52.50-53.50
Malleable	68.00-69.00

BOSTON

(Fob shipping point)

No. 1 Heavy Melt. Steel	$31.40-31.90
No. 2 Heavy Melt. Steel	31.40-31.90
No. 1 Bundles	31.40-31.90
No. 1 Busheling	31.40-31.90
Machine Shop Turnings	26.90
Mixed Borings, Turnings	26.90
Short Shovel Turnings	28.90
Bar Crops and Plate	35.00-37.00
Punchings & Plate Scrap	35.00-37.00
Chemical Borings	34.00-35.00

Cast Iron Grades

No. 1 Cupola Cast	55.00-60.00
Heavy Breakable Cast	50.00-53.00
Stove Plate	52.00-55.00
Unstripped Motor Blocks	48.00-49.00
Clean Auto Cast	48.00-50.00

CHICAGO

No. 1 Heavy Melt. Steel	$39.00-39.50
No. 2 Heavy Melt. Steel	39.00-39.50
No. 1 Bundles	39.00-39.50
No. 2 Bundles	39.00-39.50
No. 3 Bundles	37.00-37.50
Machine Shop Turnings	34.00-34.50
Mixed Borings, Turnings	34.00-34.50
Short Shovel Turnings	36.00-36.50
Cast Iron Borings	35.00-35.50
Bar Crops and Plate	46.50-47.00
Punchings	48.00-48.50
Elec. Furnace Bundles	40.00-40.50
Heavy Turnings	38.50-39.00
Cut Structurals	44.00-44.50

Cast Iron Grades

No. 1 Cupola Cast	68.00-70.00
Clean Auto Cast	68.00-70.00
No. 1 Wheels	62.00-65.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	41.25-44.25
Malleable	76.00-78.00
Rails, Rerolling	52.00-53.00
Rails, Random Lengths	49.00-50.00
Rails, 3 ft and under	56.00-57.00
Rails, 18 in. and under	58.00-59.00
Railroad Specialties	52.00-53.00
Angles, Splice Bars	52.00-53.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$40.50-41.00
No. 2 Heavy Melt. Steel	37.50-38.00
Machine Shop Turnings	32.50-33.50
Short Shovel Turnings	34.50-35.50

Cast Iron Grades (Fob shipping point)

No. 1 Cupola Cast	65.00-67.00
Mixed Cast	59.00-60.00
Heavy Breakable Cast	55.00-56.00
Brake Shoes	57.00-58.00
Clean Auto Cast	65.00-67.00
Burnt Cast	59.00-60.00

Railroad Scrap

R.R. Malleable	65.00-70.00
Rails, Rerolling	50.50-52.50
Rails, Random Lengths	50.00-51.00
Rails, 3 ft and under	56.00-58.00
Uncut Tires	48.00-49.00
Angles, Splice aBrs	55.00-56.00

BIRMINGHAM

No. 1 Heavy Melt. Steel	$37.00
No. 2 Heavy Melt. Steel	37.00
No. 1 Busheling	37.00
Nos. 1 & 2 Bundles	37.00
No. 3 Bundles	35.00
Long Turnings	24.50
Short Shovel Turnings	26.00-27.00
Cast Iron Borings	25.00
Bar Crops and Plate	40.00
Cut Structurals	38.50

Cast Iron Grades

No. 1 Cupola Cast	63.00
Stove Plate	60.00-62.00
No. 1 Wheels	59.00-61.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	38.00
R.R. Malleable	nom.
Axles, Steel	50.00
Rails, Rerolling	53.00-55.00
Rails, Random Length	45.00-48.00
Rails, 3 ft and under	53.00-55.00
Angles and Splice Bars	52.00-53.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	*$25.00
No. 2 Heavy Melt. Steel	*25.00
No. 1 Busheling	*25.00
Nos. 1 & 2 Bundles	*25.00
No. 3 Bundles	*20.00
Machine Shop Turnings	*15.50
Bar Crops and Plate	25.00
Cast Steel	25.00
Alloy Free Turnings	15.50
Cut Structurals	25.00
Tin Can Bundles	20.00

Railroad Scrap

No. 1 Heavy Melting	26.00
Axles	32.00
Rails, Random Lengths	26.50
Uncut Tires	33.50

* Fob California shipping point.

SEATTLE

No. 1 Heavy Melt. Steel	$26.00
No. 2 Heavy Melt. Steel	26.00
No. 1 Busheling	26.00
Nos. 1 & 2 Bundles	22.00-23.00
No. 3 Bundles	22.00-23.00
Machine Shop Turnings	14.50-16.50
Mixed Borings, Turnings	14.50-16.50
Punchings & Plate Scrap	26.00-28.00
Cut Structurals	26.00-28.00

Cast Iron Grades

No. 1 Cupola Cast	40.00
Charging Box Cast	25.00
Heavy Breakable Cast	24.00
Stove Plate	25.50
Unstripped Motor Blocks	24.00
Malleable	30.00
Brake Shoes	30.00
Clean Auto Cast	30.00
No. 1 Wheels	26.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Railroad Malleable	30.00
Rails, Random Lengths	21.50
Angles and Splice Bars	23.00

LOS ANGELES

No. 1 Heavy Melt. Steel	$25.00
No. 2 Heavy Melt. Steel	25.00
Nos. 1 & 2 Bundles	25.00
Machine Shop Turnings	16.00
Mixed Borings, Turnings	15.50-16.00
Punchings & Plate Scrap	28.00
Elec. Furnace Bundles	28.00

Cast Iron Grades

No. 1 Cupola Cast	35.00-36.00

HAMILTON, ONT.

(Ceiling prices, delivered)

Heavy Melt.	$22.00
No. 1 Bundles	22.00
Mechanical Bundles	20.00
Mixed Steel Scrap	19.00
Mixed Borings, Turnings	17.00
Rails, Remelting	28.00
Rails, Rerolling	26.00
Bushelings	17.00
Bushelings, new factory, prep'd	21.00
Bushelings, new factory, unprep'd	16.00
Short Steel Turnings	17.00

Cast Iron Grades*

No. 1 Cast	42.00-48.00
No. 2 Cast	35.00-37.00

* Removed from price control Aug. 9, 1947; quoted on basis of fob shipping point.

National and Sharon Steel Revise Prices

Cuts of $1 to $2 a ton on cold-rolled sheets, strip made by these producers

Pittsburgh — National Steel Corp. reduced cold-rolled sheets and strip $2 a ton, effective May 15. Price range on this product at Pittsburgh, however, continues to range between $3.45 and $3.55 per 100 pounds for a number of steel producers have not similarly reduced their prices. Including tin plate, National Steel price reductions represent $4.6 million on an annual basis, equal to $1.50 per ton on company's overall finished steel shipments.

Sharon Steel Corp. also reduced prices last week, effective May 18. Sharon's action covered $1 a ton reduction on hot-rolled carbon strip, $2 on hot and cold-rolled alloy strip and high tensile strip.

As far as can be determined at this time, none of the steel producers in this area have changed their distribution policy as a result of the establishment of a $3.55 base on cold-rolled sheets at Sparrows Point by Bethlehem Steel Co. However, such action is under consideration by at least one producer here.

New York—Sheet sellers are proceeding cautiously on third quarter commitments. Some have set up tentative quotas for the entire quarter, but others are proceeding on a month-to-month basis. Most of them will have a carryover which will blank out July and in certain instances a couple of weeks or so beyond. Due to the fact that arrearages are so substantial, some sellers have felt less pressure for establishing future quotas and consequently are coasting along just as late as they can without taking even tentative action on third quarter allocations, in the hope that the situation may become more clarified with respect to priority tonnage. They figure they will save themselves considerable paper work in the end by following this policy.

Stainless steel sheets are available within six to eight weeks, although some producers are booked ahead for the greater part of three months.

Since the establishment of Sparrows Point base on cold-rolled sheets, the price situation in the East on major sheet products has shown little change. Much depends upon what, if any, action is taken by the leading seaboard producer. Up to now, the mills that have reduced prices at certain points in the Middle West are doing no more than to meet competition in the East. Some, due to the further increase in freight rates here this month, are not even meeting competition in various cases because of the necessity for absorbing heavier freight rates.

Boston — Although the flat-rolled price structure is confused to a point there is a wide difference in quotations and methods of quoting, notably on narrow cold strip, this is causing hardly a ripple. Users of steel are more concerned as to supply than price. Cold-rolled strip is being sold on a fob, Worcester and, in some cases, a competitive base. Some have revised prices, others are holding at old levels, while in effect for some points prices are higher. Meanwhile the supply of hot-rolled carbon sheets and strip is becoming more critical and non-integrated mills are drawing on inventory. Alloys are also tightening. There is no slackening in demand and carryovers at the end of this quarter will be heavy; one mill will blank out the entire third quarter to take care of carryover.

Cleveland—The recent coal mining stoppage is having an effect now on steel quality, resulting in an unbalancing of shipments. Necessity to take any coking quality coal available during the strike resulted in acceptance of grades not suitable for producing special qualities of steel. Coke produced from that coal is now being used, and steelmakers in an attempt to produce special qualities of steel for certain flat-rolled products find it increasingly difficult to obtain heats that meet requirements. Consequently, a larger proportion of heats go to fill orders for steel of ordinary quality, with a result the filling of orders for special grades is falling behind. A Chrysler Corp. representative was reported to be here last week seeking space for warehousing steel while that company is shut down by a strike.

Chicago—Demand for sheets and strip shows no signs of diminishing and consumers are now feeling the full impact of the recent coal strike. Inventories suffered from interrupted mill shipments and these stocks have now been consumed down to the caution point. To make matters worse, reduced quotas for third quarter preclude inventory build up. The long-pull situation is such that users once more are looking for sheet and strip supplies from whatever source, this accentuating the gray market and spurring the search for semi-finished material for conversion. The outlook is similar to that in 1947, when as summer approached it was apparent that during the balance of the year an acute shortage of sheets and strip would exist.

Cincinnati—District sheet mills are not yet ready with third quarter allotments, and will likely delay schedules until after agreements are reached on programs for housing, atomic energy and military needs as advocated by the government. Autoworkers' strikes in the Detroit area have failed so far to show effect on demand. Mills, despite capacity operation, will be unable to make up tonnage lost in second quarter shutdowns, and the carryover will be heavy.

Birmingham — Sheet users have started worrying about the poor prospects for third quarter quotas. It is generally understood that government requirements will cut into third quarter quotas. At best, allocations are expected to be under those currently in effect and they are entirely insufficient.

St. Louis — Sheet and strip makers here, who had been studying the possibility of price reductions in the major eastern mills' pattern, now face a decision on whether they can avoid an increase as a result of a $5.75 price boost posted by their principal supplier of pig iron. One mill recently dropped to a low of 27 per cent scrap in its melt, as against a 33 to 35 per cent normal, and hence has little hope of absorbing higher iron costs by further cutting its use.

Warehouse . . .

Wide flange beams now quoted 5 cents per 100 pounds under other shapes

Warehouse Prices, Page 141

New York — In revising prices in line with mill and freight changes, steel warehouses now sell wide flange beams at a base price of 5 cents per 100 pounds less than other structural shapes or $4.72, New York (city) and $4.57 (country) for wide flanged. Among warehouses quotations have not jelled uniformly, reflecting differences among mills. Demand for steel from warehouses is strong with the outlook for slightly less tonnage from mills through third quarter at least. This includes some products which have not been too difficult to obtain up to now, alloys for example. Prices on most of the latter, stainless excepted, average three to four dollars at the warehouse level; higher freight has been added to the stainless price. In reducing the nail price on new mill shipments, one distributor passed on the lower price not only on new tonnage but on inventory with a similar reduction by the warehouse.

Boston — Price revisions by steel warehouses vary slightly, depending on the mill source and product. Some distributors have made no revision beyond adding higher freight costs. Demand is heavy notably for products on which inventories are low, including structurals, plates, hot-rolled sheets, and pipe. Bar stocks are uneven with cold-drawn becoming more difficult to obtain and large rounds short. Warehouse inventories of other products are generally sufficient for demand. This includes tool steels, most alloys and specialties, excluding wire products. Steel pipe demand is far in excess of supply. Flat-rolled reaching warehouse is frequently shipped out against old orders without going into stock.

Philadelphia — While certain leading jobbers have made some revisions which reflect recent changes in mill prices and the recent advance in freight rates, they have not as yet made all the changes that may be necessary and some distributors have made no revisions whatsoever. There is still some question as to what some of the eastern mills may do with respect to some products. However, this situation is becoming gradually clarified, with the likelihood that all jobbers will have revised their lists within the next few days. Demand continues active, with business improved over the corresponding period of last month. Sheets, plates and bar sized angles are in particularly strong demand.

Cincinnati — Mill shipments to warehouses are lighter, due to production barriers this quarter, and hence the gap between supply and

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AJAX FLEXIBLE COUPLING CO. INC., WESTFIELD, N. Y.

demand appears wider. The scarcity is most serious in sheets, plates and structurals. Requirements for coal mining, close to previously established tonnages, are fairly well supplied.

Birmingham — Warehouse steel prices here have not been revised yet, largely because jobbers have received virtually no steel since mill reductions were announced.

Seattle — In line with mill reductions, wholesale jobbers in this area on May 10 announced a reduction of $2 a ton in all standard and special structurals, sheered and universal plates, and cold-finished carbon bars. Other plates are down $3. There is no change in alloys. The supply situation is growing serious while the demand for all items continues strong. One Eastern mill has announced July allocations of shapes would be eliminated while others are either deferring shipments or reducing shipments in an effort to regain ground lost during the strike.

Structural Shapes . . .

Structural Shape Prices, Page 139

Boston — American Bridge Co., Pittsburgh, has the contract for the superstructure, 3100 tons, Augusta, Me., bridge over the Kennebec river, $1,063,055.60; tonnage also includes 4354 linear feet wrought iron rail. Four bids for the work were: Bethlehem Steel Co., Bethlehem, Pa., $1,131,380.98; Phoenix Bridge Corp., Phoenixville, Pa., $1,175,259.50; Harris Structural Steel Co. Inc., New York, $1,272,705.40. Contractor for the substructure, which includes the driving of 24,066 linear feet steel H-beam piles, previously bought, is W. H. Hinman Inc., North Anson, Me., $376,921. Inquiry trend for structural steel leans toward public work with plain material becoming more difficult to obtain; fabricators are unable to place ex-quota volume and shipments to warehouses are down, a situation likely to become more acute next quarter with at least one month blanked out by some mills to operate against carryover.

New York — Although there is a considerable accumulation of pending structural demand, recent inquiries are light and orders are rather spotty. A leading award calls for 1500 tons for a housing project in lower Manhattan, placed with the Harris Structural Steel Co., this city. Shape supply continues tight and, except for the change occasioned by the increase in freight rates May 6, delivered prices here are unchanged.

Philadelphia — Structural demand is lagging, due in part to fast mounting costs in the building trades and in part, although in lesser degree, to the sold-up condition of a number of the larger fabricators. In fact, some of the smaller shops have been putting on a drive for tonnage recently and as a result even they are now booked well ahead on an average. Shapes continue scarce, with prices in the East unchanged.

Seattle — Fabricators are faced with a critical supply situation with mill shipments dwindling as an aftermath of the coal strike. One local plant reports no mill allocations for the third quarter. With inventories unusually low, it is impossible to bid on larger jobs.

Steel Bars . . .

Bar Prices, Page 138

New York—Consumers of hot carbon bars look for greater stringency in supply as the year advances with special inroads being made to meet domestic defense requirements and swelling needs for foreign aid. At the same time, they do not believe these inroads will be as heavy as contemplated earlier in the spring.

Cold-drawn bar consumers also report a further tightening, stating it is now difficult to obtain small flats and rounds before September and large rounds, 3 to 6 inches, before fourth quarter. The situation with regard to the latter was stiffened appreciably over recent weeks, due to substantial requirements for machinery and electrical equipment and also for export. There is also a quickening in demand for shell stock, involving various dimensions.

One leading seller is now out of the market completely until the fourth quarter; and another is parceling out its tonnage on a strictly allocation basis. One cold drawer, who over recent months has been promoting sales of cold-drawn bar tonnage by tying it in with sales of other steel products in more stringent demand, now finds himself oversold, due in part to the coal strike a few weeks ago.

Hot and cold alloy bar deliveries are becoming more extended, with one leading producer quoting electric furnace bars for July and August, with nothing available before then; open-hearth alloy bars, late September and October.

Boston — Steel bars, carbon and alloys, are tightening in most categories, with scattered inquiries appearing for the armament program, notably aircraft. Jet engine requirements, affecting stainless, are higher with more orders and inquiries being lined up for other engine builders, notably in the Hartford district. Aircraft activity is slated to stimulate sub-contracting with heavier alloy and special demand. Aircraft engine builders sub-contracted on a large scale during the war. Some shifts in forge shop specifications are possible. Mills are going back to allocations on cold-drawn bars. Prospects for third quarter supply of hot-rolled bars are not improved; large rounds are in short supply with most distributors. The price structure is mixed with several basing points covering bars delivered in this territory, depending on grade, size and point of production.

Pittsburgh—Sharp increase in cold-finished bar demand appears to be leveling off, although new orders continue to exceed present production schedules. Sellers are unable to promise definite delivery schedules on cold-finished carbon bars 3 inches and under. Order backlogs on cold-finished carbon items are extended into September and November; alloy electric furnace, 10 to 12 weeks; open hearth alloys, into October. Cold-finished bar producers report moderate improvement in new deliveries but unbalanced inventories prevent full scale production schedules. Independent cold-finished bar interests have not yet reduced prices $2 per ton in line with that announced by

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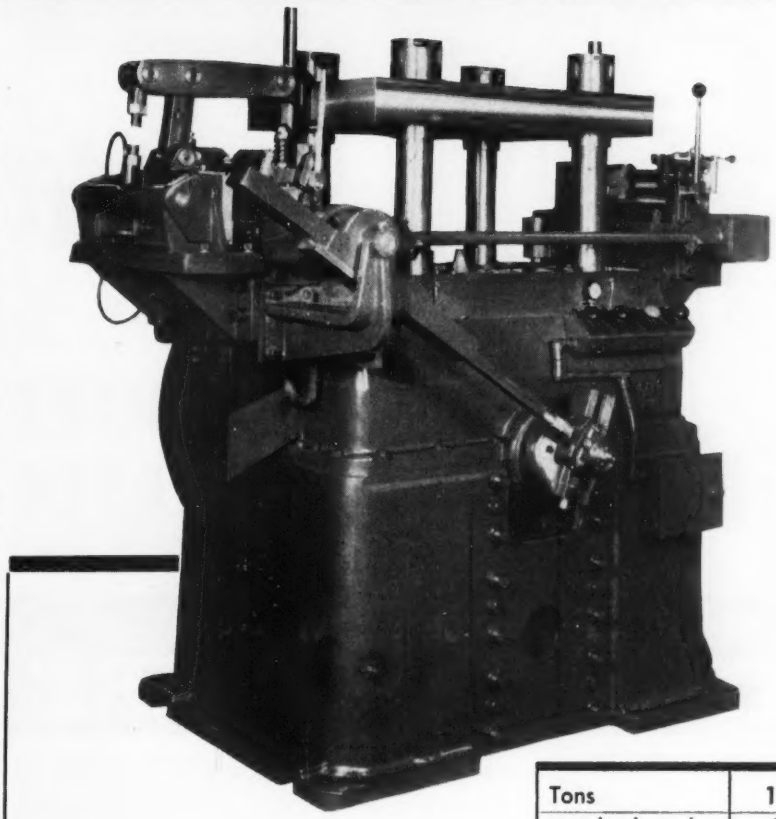

Tons	150
standard stroke	3"
adjustment	3
crankshaft dia.	6½"x8½"
pitman screw dia.	5½"
draw rods dia.	4¾"
die clearance	20"x25"
bed area	38"x60"
bed opening	10"x40"
top platen area	36"x54"
flywheel dia.	60"x12"
flywheel rim weight	4000#
height over all	105"
to top of bed	71"
h.p. motor	25
floor space	8'x8'
weight	39,000#
strokes per min.	150
hole in upper slide for punch-shank	3"

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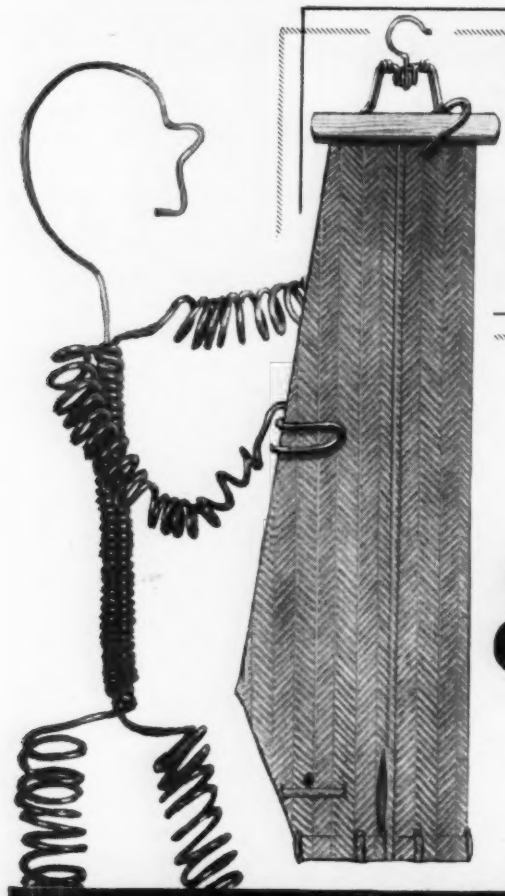

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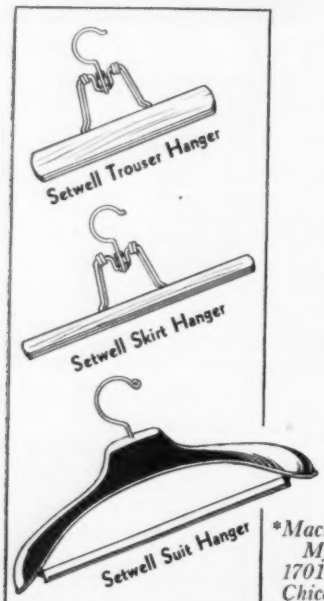

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integrated producers two weeks ago.

Philadelphia — Consumers report continued stringency in hot carbon bars and increasing difficulty in getting cold-drawn material. Most hot mills have set up quotas for third quarter, but with few exceptions they have established allotments on a smaller scale. Cold drawers have little to offer before late August in any specification and one leading interest is sold up completely until the fourth quarter.

Plates . . .

Plate Prices, Page 139

Philadelphia — While one leading eastern plate producer has not as yet set up quotas for the third quarter, most of the others have done so and on a basis that may have to be revised later, as soon as ERP allotments are definitely set up and details of the domestic priority programs are more clearly established. Railroad quotas have been fully arranged, and major details are nearing completion with respect to housing requirements and certain atomic bomb projects, but no agreement has been reached with respect to oil industry requirements and there is still uncertainty as to what may further develop with regard to defense needs. Apparently for the time being at least there will be no special allotment program for ship tonnage, although there is little doubt but what the yards will get whatever is required for tanker and merchant ship construction. Eastern plate prices continued unchanged.

Pennsylvania Railroad has placed an order for the construction of an all-steel tug boat, 105 feet in length, with the R.T.C. Shipbuilding Co., Camden, N. J. It will be equipped with a coal burning, 3-cylinder double acting uniflow marine engine of 1200 indicated horsepower, to be built by the Skinner Engine Co., Erie, Pa. The tug will be for operation in New York harbor.

Boston — Plate fabricating shops, including tank builders, are confronted with a further shrinkage in third quarter tonnage, reflecting heavy carryovers, allowances for vacation shutdowns and earmarked volume for railroads and car builders. What is left represents less than half a quarter production for new orders. Warehouse stocks are low and some distributors are getting a sharp cut this month. By fourth quarter, the increase in shipbuilding activity is expected to begin to show in plate demand. Freight rate to Boston from Sparrows Point is now 56 cents per 100 pounds.

New York — Plate sellers look for pressure to be increasingly heavy over the remainder of the year, especially once the defence program gets under way. Meanwhile, there is a steady increase in shipyard requirements, particularly for ship repairs. New ship construction is taking a spurt, but it probably will be several months before the volume will reach substantial proportions.

Plate mills also look for a considerable broadening in oil and gas industry requirements, once the program of voluntary allocation becomes definitely set up. It is expected that

allotments, while far short of what oil and gas producers would like to have, will be well above the average of the postwar period to date.

Apart from the effect of the recent increase in freight rates, delivered prices in the East are unchanged. Eastern independents have announced no change up to this time and the country's leading producer, which announced a $1 reduction at certain points at the beginning of the month, is meeting competition in the East as it finds it.

Birmingham — An air of uncertainty is evident in the plate supply situation. Revised allocations to carbuilding are in prospect. Warehouse people continue to ask for increased quotas and tank manufacturers are being caught short in some instances. On the whole, a generally tight situation is indicated through at least the third quarter.

St. Louis — Increased government pressure for plates, hot and cold-rolled and galvanized sheets for the railway car and atomic bomb programs is noted here. At the moment, 700 tons per month of plates are being allocated to cars and 100 tons of plates and sheets to the bomb project, but indications are this figure may soon increase. So far, other consumers are not hurt seriously by the diversion. Granite City Steel Co., whose ingot capacity is considerably above rolling capacity until adjustment on its new cold reduction mill are completed, has been converting a few slabs to hot coils and sheets for further conversion in other plants. Customer allocations for the third quarter have been made, but orders for them will not be accepted until production outlook on the cold mill is determined.

Seattle — Plate shortages are seriously restricting plant operations, third quarter allocations still being uncertain and deferred. Some mills are withdrawing plant allotments for June and July in order to offset the tonnage lost by the coal strike. For this reason, plants in this area are unable to accept all the orders being offered, there being a good volume of tanks, vat and boiler business.

Tubular Goods . . .

Tubular Goods Prices, Page 139

Boston — Users of bedstead tubing, including furniture shops, confronted with the necessity of locating new sources of supply by fourth quarter or substituting electric welded as some are now doing, have a bending problem in crimping with present equipment on the latter type. A leading supplier of bedstead tubing is going out of production and will meet current commitments by October. Several fabricators of finished goods requiring tubing have small production units for the forming of their own electric tubing, and at least one could supply some tonnage to other interests if strip steel were available. Most distributors of merchant steel pipe are giving up on attempts to increase quotas as the overall supply at the mill level tightens for next quarter. Among housing materials, plumbing and heating, pipe is short and for construction various sizes and grades are sometimes substituted for original specifications.

MATERIAL HANDLING *News*

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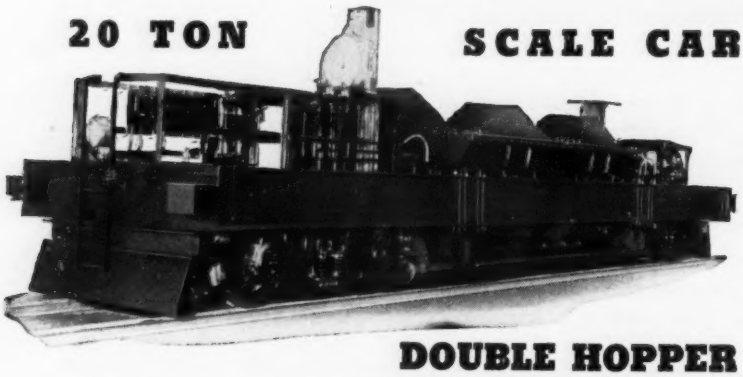

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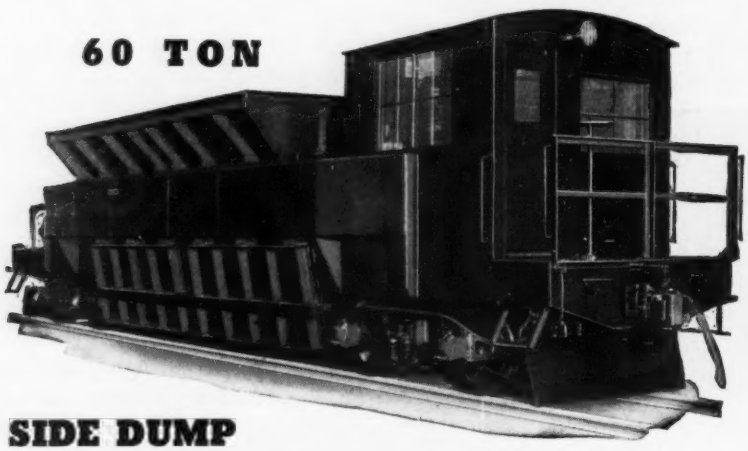
60 TON



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900 cu. ft. capacity, two-section hopper with electric heaters. Each section has independently-operated discharge gates. Car is equipped with air brakes, automatic couplers, headlights and whistle. Each truck mounts one 75-HP motor.

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Wire . . .

Wire Prices, Page 139

New York — At least two eastern wire mills are practically on a f.o.b. mill basis on numerous commodities and are quoting prices aligned to costs; the New York City mill has not as yet revised its price list. Demand for wire holds with easing apparent in only a few spots. One is the automotive with pressure less for wire tonnage. Buying of tempered spring wire is active and demand for music wire is improving with deliveries prompt on most sizes from stock. Clock spring material is holding in excess of expectations in view of the strong buying for the grade.

Boston — Wire users are watching inventories more closely for balance, but there is slight letdown in overall demand. A few scattered items are in balance with demand while others are extended through the balance of the year. Music wire stocks in more sizes are better balanced with prompt delivery generally possible. Supply of resulphurized wire in the middle size ranges has improved, but is difficult to obtain in other sizes. Screw manufacturers still lack balance and are unable to buy enough rods. August production schedules are in with most mills operating on a monthly allocation basis. Some mills have made no changes in wire prices and several in the east are on an f.o.b. mill basis for many products, meeting competition in some cases at other points.

Birmingham — One of the South's largest wire jobbers has not more than a fifth what it needs to approximately satisfy consumer demands. Every item in wire is involved in the shortage. At least one wire processor has held expansion plans in abeyance due to the continued inability to get adequate stock.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 138

Boston — Demand for concrete reinforcing bars exceeds distributor quotas, which in most cases are being doled out to regular customers. Bulk of tonnage for new construction, including Mystic river bridge and Logan airport requirements of approximately 2000 tons, is supplied by one eastern mill-fabricator. Contractors are forced to shop around to place bar orders, often the last of the major steel building materials to be placed. Several thousand tons are active and up for award, including housing, veterans hospital, and Connecticut highways.

Delivery Charges Raised In Chicago-Gary District

Chicago — To reflect the recent advance in freight rates, delivery charges within the switching district of Chicago and Gary, Ind., have been increased 10 cents per ton. The carload rail rate is now $1.30 per ton and less-than-carload rate, formerly 24 cents per hundred pounds, is now 30 cents. Carload trucking rate has been raised from $2.20 per ton to $2.30, and less-than-carload from 29 cents per hundred pounds to 35 cents.

Pig Iron . . .

Two producers raise prices $3 in South; Granite City base price up $5.75

Pig Iron Prices, Page 140

St. Louis — Missouri-Illinois Furnaces Inc., supplier of virtually all the pig iron used in this district, has raised prices $5.75 a ton. This is the third increase in a year and puts the price approximately 36 per cent above a year ago. Company announced it was a result of a 50 per cent increase in ore, coal, purchased coke and transportation costs, and of a $750,000 furnace repair job to be started in July.

Repairs are to be on a "risk basis," since the company has no assurance it will be reimbursed if the $3,255,000 offer it made to the government for the plant's purchase is rejected. During the war the plant was owned by the Defense Plant Corp. and was operated by Koppers Co. The bid of Missouri-Illinois Furnaces Inc., a Koppers subsidiary, was approved by the War Assets Administration and by the Department of Justice, but title cannot be transferred pending the appeal on a suit, brought by Fulton Iron Co. of Cleveland, attacking the sale.

Pig production currently is at 95 per cent of 1000-ton daily capacity. Demand is heavier as a result of foundries increasing melting capacity and all consumers attempting to stockpile against a new coal strike, and Missouri-Illinois Furnaces' impending partial shutdown for repairs. Some users are trying to lay in more cast scrap, but most have been using a 20-40 per cent minimum of iron in their melts already, a ratio below which they cannot go without risking costly breakage in their products. Probings of Texas sources for increased iron shipments are reported to have gotten few results. Several foundries predict sharp curtailments in operations during the local pig scarcity.

New York — While pressure for pig iron continues strong, most foundry consumers here complain more about difficulty in obtaining coke. Oven coke is exceedingly scarce and, while consumers are meeting with fair success in the substitution of beehive coke, this success is far from uniform due particularly to the varying qualities of the beehive now available. At the same time, there appears to be an easing with respect to foundry back-logs. The majority of foundries seem to be booked ahead about as far as ever, but others report a falling off as compared with a couple of months or so ago. Certain foundries are out fighting hard for business in an effort to maintain even a comfortable backlog.

Pittsburgh — Foundry operations have recorded some improvement in recent weeks, although average production schedules are still substantially below capacity levels. Inventories of coke, scrap and pig iron are far below normal, with that of pig iron in most critical short supply. Most foundries report very heavy order backlogs and there is no indication of any easing in volume of incoming business. Jones & Laughlin Steel Corp., blew out its No. 3 furnace at Aliquippa for relining May 15. This

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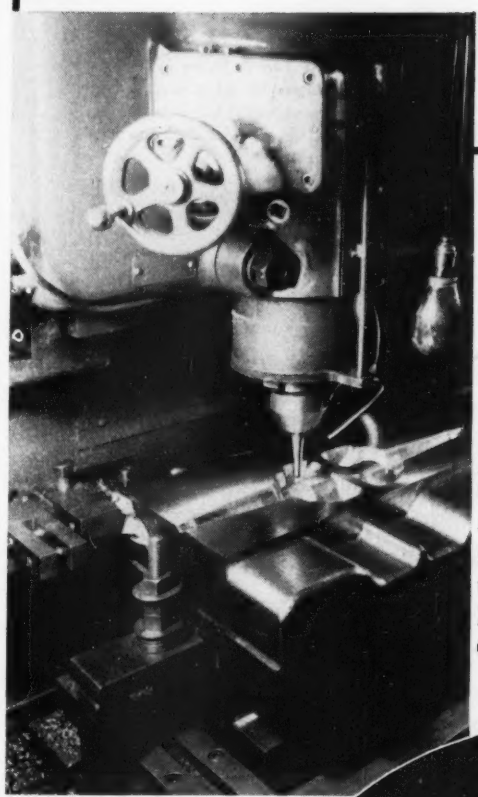

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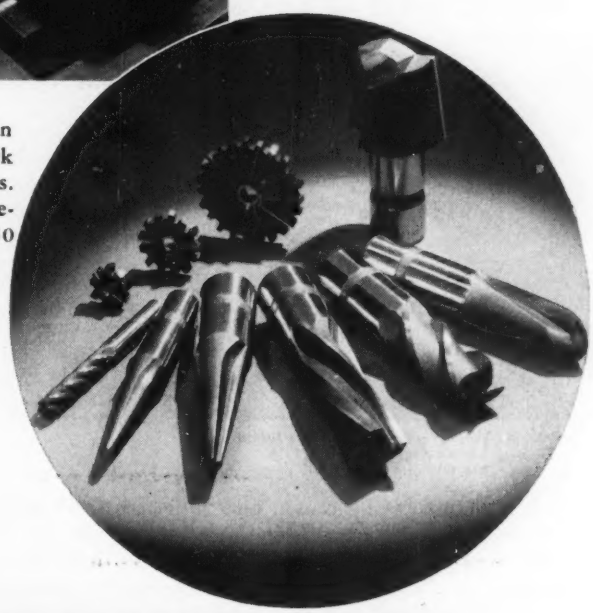

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furnace has operated for 5 years.

Higher freight rates make the delivered price, North and South Side Pittsburgh, on iron produced at Neville Island base as follows: Basic, $40.08; No. 2 foundry and malleable, $40.58; and bessemer, $41.08. Similarly freight rates from Neville Island to McKees Rocks and other major surrounding areas have been increased.

Tennessee Products Corp. raised charcoal pig iron $3, effective May 18, to $58, f.o.b. Lyles, Tenn., furnace. This is the second price advance by the company this year. The previous increase was $5 effective Jan. 8.

Boston — Slightly heavier silvery tonnage is in sight with the Buffalo furnace producing that grade again in blast after repairs, but no additional foundry or basic is scheduled for June or third quarter. Melters of basic are hard put to maintain production schedules, the Worcester steel works excepted with iron supplied by an affiliated subsidiary. Others, however, are generally at the bottom of the pile when a new delivery is received. Total foundry melt is well maintained, mostly due to high schedules by textile mill equipment builders. The few shops with lower melts are not holding up iron. The high ratio of scrap in melts has forced more users of casting to revise time and speeds for machining; this applies notably to pressure castings.

Philadelphia — While advances of $3 a ton have been made in the South, eastern pig iron producers are quoting at unchanged levels. Supply is slightly easier, although still far short of requirements.

Chicago — Approximately 3500 AFL foundry workers on strike since May 3 in more than 40 jobbing foundries in the Chicago area were to vote May 22 on acceptance of a 12-cent an hour wage increase offered by the operator. If the offer is accepted, which seemed likely, the men would return to work May 24. The union originally demanded 43 cents an hour more, but scaled this down later to 13 cents. The strike was called when the operators held firm on a 10-cent an hour offer.

Meanwhile, midwestern foundries are suffering from shortage of pig iron and coke. Every few days they find inventories exhausted and are obliged to shut down or drop shifts until new shipments are received. Fact is, there is simply not enough of either raw material to accommodate the tremendous demand. Orders for castings are such that there is little chance of gaining ground until summer when shops will be shut down for vacation periods.

Buffalo — Foundries report lack of coke continues to affect melting operations, although one of the leading suppliers is back to the pre-strike level in tonnage shipped. While a top merchant iron producer noted a slight easement in recent demand from gray iron foundries, it was not enough to alter the tight overall situation. Hanna Furnace has relighted its fourth and only inactive furnace which was shut down during the coal strike for relining.

Cincinnati — A further pickup in shipments of pig iron has brought supplies near the level maintained before the coal strike but fails to meet the demand. Principal bottle-

neck now, threatening to cut the melt already curtailed, is lack of coke. The principal district producer is on normal schedule again but unable to meet needs of those affected by 50 per cent reductions by other suppliers. Oven foundry coke prices are up $1.50.

Birmingham — Pig iron supplies show no improvement, although the major portion of the district's merchant iron output is finding its way into the general Southeast territory. A boost of $3 a ton was announced here during the week by Woodward Iron Co. and Sloss-Sheffield Steel & Iron Co., both of which had been selling $3 below Republic prices.

No. 2 blast furnace of Tennessee Coal, Iron & Railroad Co. at Ensley has been restored to service after being idle since Mar. 16 for relining. This puts all nine of the company's iron-makers into service and concluded a long range rehabilitation program.

Seattle—Geneva has resumed production of pig iron but present supplies are being diverted to steelmaking mills. Foundries in this area are advised they cannot expect shipments prior to July 1 and then only in limited tonnages. Foundries report cast iron scrap supplies somewhat easier, the price firm at $40 gross.

Iron Ore . . .

Iron Ore Prices, Page 140

Cleveland — Consumption of Lake Superior iron ore declined last month to 4,976,069 tons from 6,634,243 tons in March and 6,578,623 tons in April, 1947, according to the Lake Superior Iron Ore Association, this city. This brought the total for the first four months to 25,107,565 tons compared with 26,845,967 tons for the like period a year ago.

Total stocks of iron ore increased about 1,102,709 tons last month to a total of 17,124,962 and compared with 13,554,803 tons as of May 1, 1947. Of the total at the beginning of this month, 1,953,179 tons were on Lake Erie docks in United States ports, 14,594,132 tons at furnaces in this country, and 577,651 tons at furnaces in Canada.

Although a new furnace, Carnegie-Illinois Steel Corp.'s No. 11, South Chicago, Ill., was placed in operation, the total number of furnaces held unchanged at 192 because Pittsburgh Coke & Chemical Co., Sharpsville, Pa., dismantled one furnace. Total number in blast as of May 1 increased to 171 from 164 a month earlier, as seven were blown in here, making 162 in blast and 20 idle against 155 in blast and 27 idle as of Apr. 1. One furnace remained idle and 9 in blast in Canada.

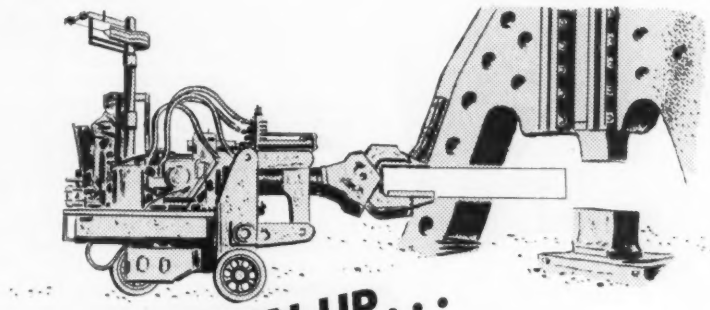
Bolts, Nuts . . .

Bolt, Nut, Rivet Prices, Page 139

New York — Although bolt and nut demand still exceeds supply, especially for the smaller sizes for various types of machine and durable goods assembly, overall backlogs are down somewhat. This is ascribed in part to an easing in export demand, which in turn is due largely to a shortage of dollars. In some countries, supply for the time being at least has caught up with requirements. At the same time, domestic demand for the larger sizes, ½ by 6 and over, is easier.

Manufacturers of bolts and nuts, meanwhile, continue to have difficulty obtaining sufficient steel. Some say the situation shows every indication of becoming still tighter before the year is over. This outlook reflects the probability that the defense program, while slow in getting under way, will be accelerated as the end of the year approaches. Certain of these buyers, however, declare that defense requirements may not cut as wide a swath this year as was expected a month or so ago.

Pittsburgh — Output of fasteners has shown a gradual improvement since the disruption to production schedules during the coal strike. Some interests are catching up on order backlogs of large and small bolts and report warehouse stocks of standard items have been augmented somewhat in recent weeks. Mill deliveries of cold heading wire and wire coils and flats for nuts have shown little improvement with result that fastener production schedules have been adversely affected on the end items using these steel products. Cold headed fastener items are extended 45 days, while deliveries on hot mill products are available in one to two weeks. Some popular sizes of cold punch nuts are extended 90 to 100 days, particularly in sizes 3/4, 7/8 and 5/8-inch.



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Scrap . . .

Stalemate in Buffalo market broken as substantial tonnage moves at formula

Scrap Prices, Page 144

Buffalo — The prolonged stalemate in the scrap market here was broken last week as dealers accepted the formula bid price from two mill consumers on orders which totaled about 15,000 tons. Dealers had been holding off for higher prices in view of sales in the midstate areas to an outside buying source at $2.50 above formula and similar export sales to Canada at about the same price.

Dealers took new business at the $39.75 formula price for No. 2 heavy melting steel and bundles when informed that the outside buyer was demanding quality material and when rejections on shipments had increased. In addition, charges of discrimination against Buffalo scrap dealers who were told to stop shipments into Canada were softened when it was learned that action along the same lines was taken at other shipping points along the border.

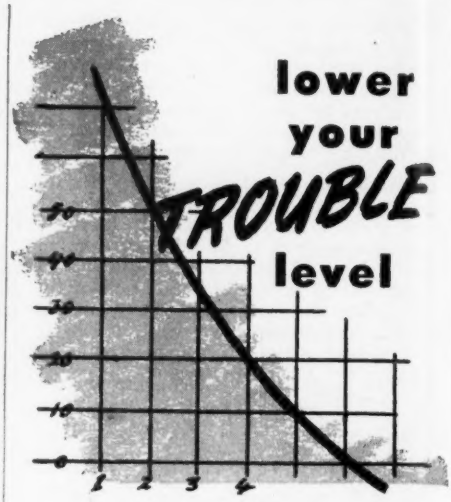
Despite talk of a halt on shipments to Canada, it was noted that there was no complete stoppage in the movement of scrap across the border here. Dealers were reluctant to discuss the Canadian situation, but it was apparent that they were continuing to ship against old orders.

The range on No. 2 heavy melting slipped to the formula basis as orders previously placed near the $42 level were reported filled. Cast scrap prices continued to hold unchanged, as foundries increase their purchases to make up for the lack of pig iron.

Detroit — As experienced observers read the market, it is definitely weaker because material is in better supply, yet at the same time prices on open-hearth grades hold strongly be cause of what might be called "subsurface influence." The latter work about as follows: A hard-pressed fabricator goes to a steel mill and declaims that he simply has to have 1000 tons of sheets to stay in business. Even though he is an old friend and customer, the mill spokesmen say they just cannot squeeze out the tonnage for him; but if he could locate 500 tons of scrap for their open-hearths they just might be able to do something about finished steel.

So the frenzied customer rushes back to his scrap broker and says he simply has to have 500 tons of scrap shipped to the mill. The only way the broker can do this is to pay a little more for the scrap, so he tells the fabricator it can be arranged for $5 per ton premium. That is a small price to pay to insure delivery of 1000 tons of sheets when they are selling on the gray market for $200 a ton, so he agrees to the premium. The scrap is shipped to the mill which pays only the "formula" price and the fabricator gets his steel at an extra cost of only $5 a ton and a few gray hairs.

When the scrap broker approaches the mill he is told there is rigid adherence to the formula price and not one cent more will be paid. When informed of the fabricator's "deal," the mill people shrug and say it's not their fault; their competitors are do-



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ing the same thing and they were only trying to take care of an old customer.

New York — Brokers are being forced to pay higher for cast scrap. They have advanced their buying prices $1 a ton on No. 1 cupola cast, to a spread of $55 to $57, fob shipping point, and are now offering $56 to $58 for charging box and heavy breakable grades, compared with $55 to $56 recently. Unstripped motor blocks also are higher at $52.50-53.50. Continued shortage in pig iron is again stiffening the demand for cast. This situation is also reflected in steel scrap, although following the increase of a week ago of 50 cents a ton on the principal open-hearth grades there has been no change in brokers' buying prices. Turnings are steady and, while an easier undertone prevails in the low phos grades, prices are steady.

Boston — More steelmaking scrap is coming out and supply has improved, but quality is a complaint with some melters. Buying is steady, but not heavy, while cast is moving more slowly. More consumers of cast have built up moderate inventories. Around $55 delivered is considered the market for No. 1 cupola cast. Heavy melting steel scrap is moving generally at unchanged formula prices and low phos brings the usual $2.50 differential. Enough light steel scrap is available for the operation of presses in this area. Steel scrap is bought here on a shipping point basis and consumers are generally absorbing the increase in freight.

Pittsburgh—Flow of scrap to mills' yards has been well sustained, with some major interests reporting inventories up 30 to 40 per cent over earlier this year. Major portion of the increase in inventories has resulted from curtailed ingot operations due to industrial gas shortage and coal strike. New buying continues limited to very small lots and at formula prices. A few exceptions to this are reported on remote material said to be delivered here at above the $2.50 springboard. Scrap prices here have so far resisted the upward trend recently noted in the East.

Supply of cast scrap has recorded substantial improvement recently, said to be due to the fact higher prices have made it profitable for the accumulation of material. Despite the heavy demand for nearly all cast grades, the recent substantial increase in supplies has resulted in somewhat lower prices on recent sales. No. 1 cupola has moved this week within the range of $64 to $65.

Cleveland—Rejection of scrap not meeting specifications has increased as result of the good flow of material. Another indication of the easier supply is a decline in reports of payment of over-the-formula prices. Concerning reports of over-the-formula prices being paid for scrap for Empire Steel Corp., Mansfield, O., that company states it is paying not more than the formula.

Philadelphia — Steel scrap prices are steady, and while the flow of tonnage is not quite as free as when mild weather first set in, it nevertheless is fairly active. Leading consumers, however, still complain over the quality of scrap and some rejections are noted. Cast scrap is featured by

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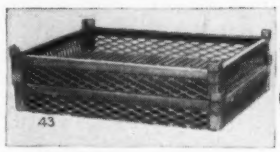

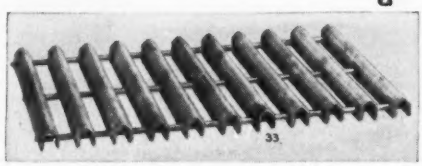

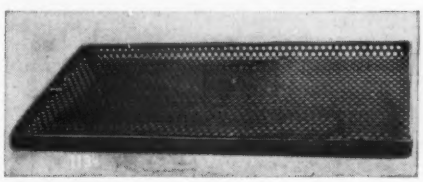

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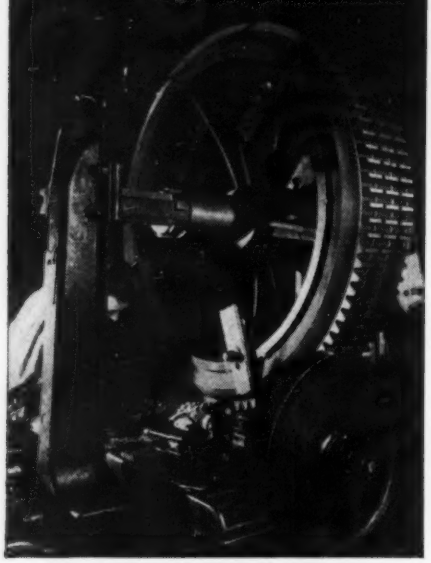

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a 50 cent advance in charging box and heavy breakable grades, the market now holding at $61.50 to $62.50 delivered.

Chicago — Purchase of more than 50,000 tons of steelmaking scrap by a large mill here at the prevailing price of $39.50 per ton delivered for No. 1 heavy melting has served to stabilize the market at this level. Grades related to heavy melting are holding to formula. Material is flowing in good volume and making some inventory building possible. Some resistance is developing to the higher price tendency in railroad grades, a condition which has been evident for several weeks. Some 41 gray iron foundries in the district are still closed by strike, and this has eased the demand for foundry scrap. This situation may change within a week or two for it appears that settlement of the strike is about to be effected.

Refractories . . .

Refractories Prices, Page 140

Pittsburgh — Freight car shortage continues to be a retarding factor in shipment of refractories. However, to date this situation has not impeded production schedules. Most interests have resumed normal operations following curtailment during the coal strike period. New demand continues very heavy, particularly for coke oven repairs. Deliveries are extended 6 months on super-duty clay brick and special shape silica bricks. Most standard sizes, however, are available within 3 weeks. New freight rate schedules have resulted in lower delivered prices to some consuming points, reflecting the $1.26 per ton maximum under the new ICC regulations.

Railroads Return Half of Steel Bought as Scrap

New York — Railroads have turned back to the iron and steel industry more than a ton of scrap metal for every two tons of iron and steel they bought during the past four years, according to the Association of American Railroads.

In 1947, railroads and railroad equipment builders obtained 6,029,000 tons of rolled steel which went into the production of new freight and passenger cars, locomotives, repair of equipment and roadway, and other purposes connected with railroad operation. At the same time, the railroads turned back to the iron and steel industry, including foundries, 3,818,000 net tons of scrap. Scrap returned by the railroads to the industry in 1946 amounted to 3,164,000 net tons compared with 4,764,000 net tons of rolled steel received.

In addition, the railroads salvage and reclaim each year approximately 1 million tons of worn-out and obsolete parts and materials, which help in solving the difficult problem of distributing available steel among the many users dependent upon it.

Of the 29 million net tons of purchase scrap consumed by the iron and steel industry in 1947, railroads alone supplied 13.1 per cent. In 1946, the industry consumed 25 million net tons of purchase scrap, of which 13.8 per cent came from the railroads.

Rails, Cars . . .

Track Material Prices, Page 139

New York — New York Central has closed bids on a number of multiple-unit passenger cars for suburban service, with the St. Louis Car Co. reported low. The railroad asked for alternate lots of 30, 50 and 100, with the possibility that only 30 will be bought at this time.

Delivery of hopper cars this year has been at more than three times the rate of a year ago, according to American Railway Car Institute. During four months through April, 11,344 hoppers were built, against 3390 during the same 1947 period. Production of hoppers represented about 30 per cent of all freight car building, total deliveries for the 1948 period having amounted to 35,766 cars. During the past six months, production of freight cars of all types averaged 9088 per month.

Pittsburgh—Considerable rail tonnage was lost by Pittsburgh mills during the recent coal strike, resulting in carryover tonnages of two to three weeks. Production loss in railroad specialties was not so severe.

Anchorage, Alaska — Alaska Railroad announces award of the following contracts: Railroad terminal yard at Fairbanks to M. P. Munter Co., Seattle, $640,397; warehouses and other structures at Fairbanks, involving about 400 tons shapes, to Morrison-Knudsen Co., Seattle, $3,080,170; track raising and collateral work on 99-mile railroad stretch to Morrison-Knudsen Co., $4,401,541; replacement of 94 miles railroad track, A. Smith Construction Co., Missouri, low, $996,432; award pending delivery of steel.

Canada . . .

Toronto, Ont. — Steel supply-demand conditions show little change from earlier in the year.

Mills are booked through to the end of September on most items. Quarterly bookings are mostly a formality as the steelmakers inform customers as to the tonnage they will receive, instead of the latter placing their order for desired tonnages. Quotas for third quarter are the same as for the second quarter with the exception of a minor cut in carbon steel bars.

There has been no easing in supply of black and galvanized steel sheets and demand continues well in excess of supply.

Steel plate also is restricted insofar as meeting domestic demand is concerned, and requirements of railroad rolling stock builders have been moving ahead steadily. Imports tend to relieve some of the pressure.

Demand for carbon steel bars is taking all available supply, but shortage in these items is not as acute as in steel sheets and plate owing to the fewer number of big consumers. Cold-rolled bars, stainless steel and alloy bars continue in fair supply with no actual shortage.

No improvement is reported in supply of structural steel shapes, but new construction projects, which have been curbed on government request, are proceeding in a somewhat restricted manner. Large government jobs are restricted to a few hydroelectric plants.

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3000 tons, air force hangar near Fairbanks, Alaska, to Judson Pacific Murphy Corp., Oakland, Calif.; Birch, Lytell & Johnson, Seattle, general contractors.

1500 tons, Hillman Housing Corp. project, Grand St., Manhattan, New York, to Harris Structural Steel Co., that city.

825 tons, apartment, East 36th St., Manhattan, New York, through Murray Hill Construction Corp., serving as general contractor for the owner, to Harris Structural Steel Co., that city.

750 tons, factory building, Asten-Hill Mfg. Co., Philadelphia, to Bethlehem Steel Co.

410 tons, three plant buildings, Union Bag & Paper Co., Savannah, Ga., to American Bridge Co., Pittsburgh; Morton C. Tuttle Co., Boston, general contractor.

260 tons, diesel engine shop, Chicago & North Western Railroad, Proviso, Ill., to Bethlehem Steel Co.; S. N. Nielsen Co., Chicago, contractor.

220 tons, bridge, S 58-3-1, Hall County, Nebraska, for state, to Capitol Bridge Co., Lincoln, Nebr.

175 tons, Plymouth hotel building, Fort Fairfield, Me., to Groisser & Shlager Iron Works, Somerville, Mass.

150 tons, additional award for Hanford, Wash., building, to Pacific Car & Foundry Co., Seattle.

STRUCTURAL STEEL PENDING

11,032 tons, transmission towers, spec. 2165, Arizona and Nevada, for Bureau of Reclamation; American Bridge Co., Pittsburgh, low.

2040 tons, Washington state bridge, Wenatchee; bids to Olympia, June 18.

1000 tons, Oregon state college pavillion, Corvallis; general contract to J. G. Watts Construction Co., Seattle.

800 tons, hydroelectric plant, Sault St. Marie, Mich., bids to U. S. Engineer, Detroit, April 21, rejected.

750 tons, theology building, Boston University, Boston, Mass.; bids May 28.

700 tons, factory and office, Rosenau Bros., Philadelphia, with Leonard Shaffer, that city, general contractor, closing bids June 5.

400 tons, Alaska Railroad terminal buildings, Fairbanks, Alaska; general contract to Morrison-Knudsen Co., Seattle.

350 tons, five state bridges, erecting, Hollis-Buxton, Yarmouth, Crystal, Presque Isle and Unity, Me.; bids May 26, state highway commission, Augusta.

290 tons, state bridge, Lancaster county, Pennsylvania; bids June 4.

290 tons, court house, hospital, Cape May, N. J; bids closed May 17.

270 tons, bridge, sec. 59-F, Grass Lake, Lake County, Ill., for State Highway Division; American Bridge Co., Pittsburgh, low on bids Apr. 30.

253 tons, Tri-State Highway, sec. 2425.1 HF, Cook county, Ill., for State Highway Division; American Bridge Co., Pittsburgh, low on bids Apr. 30.

193 tons, bridge, sec. 117-1VF, Montgomery county, Ill., for State Highway division; Illinois Steel Bridge Co., Jacksonville, Ill., low on bids Apr 30.

Unstated, reconstruction Manette bridge by Washington state highway commission; plans in preparation for $750,000 project.

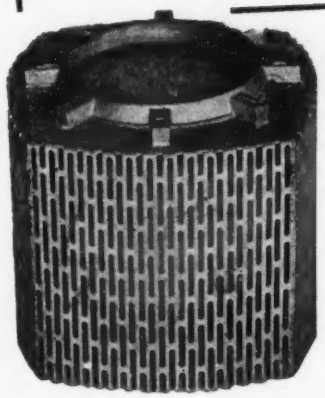
REINFORCING BARS . . .

REINFORCING BARS PLACED

1200 tons, buildings, Logan Airport, East Boston, Mass., to Bethlehem Steel Co.; Fitzgerald Construction Co., Boston, general contractor.

600 tons, piers, Mystic river bridge, Boston, to Bethlehem Steel Co.; Merritt-Chapman

Perforated Strainers and—



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Perforated Metal Screens
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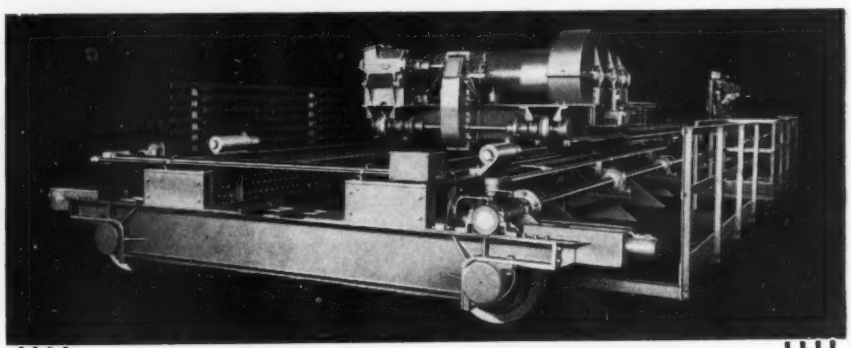
Armorgrids



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BEDFORD FOUNDRY & MACHINE CO.
BEDFORD, INDIANA, U. S. A.
Engineers • Designers • Fabricators

& Scott Corp., Boston, general contractor.

465 tons, addition, Telephone building, Yonkers, N. Y., to Grand Iron Works Inc., New York.

350 tons, library, Massachusetts Institute of Technology, Cambridge, Mass., to Truscon Steel Co., Boston.

200 tons, hospital at Sitka, Alaska, to Northwest Steel Rolling Mills, Seattle; Carson Construction Co., contractors.

200 tons, various construction projects, to Bethlehem Pacific Coast Steel Corp., Seattle.

110 tons, school at Ellensburg, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

3000 tons, U. S. Engineer, Portland, Ore.; inv. 817, bids in.

650 tons, pavillion Oregon State College, Corvallis; general contract to J. G. Watts Construction Co., Seattle.

500 tons, Washington state bridge at Wenatchee; bids to Olympia June 18.

500 tons or more, Seattle public safety building; plans ready May 24; bids probably in July.

300 tons, Chester County Home, Westchester, Pa.; bids asked.

250 tons, factory and office, Rosenau Bros., Philadelphia; bids close June 5 through Leonard Shaffer, that city, general contractor.

180 tons, state bridge work, Delaware county, Pennsylvania; bids June 4.

Unstated, five story state office building, Salem, Oreg; Sound Construction & Engineering Co., Seattle, low, $1,592,592.

PLATES . . .

PLATES PENDING

260 tons, U. S. Engineer, Kansas City, Mo.; inv. 293, bids May 24.

210 tons, stacks and miscellaneous work, Sanitary District of Chicago; Industrial Boiler & Tank Co., Chicago, low on bids May 6.

Unstated, elevated steel water tank for Spokane area; bids to Navy, Seattle, June 2; #19,407.

PIPE . . .

CAST IRON PIPE PLACED

430 tons, 16-inch, Franklin, N. H., to United States Pipe & Foundry Co., Burlington, N. J.

CAST IRON PIPE PENDING

300 tons, 4 to 8 inch cast iron water pipe; bids to F. C. Wyckoff, city clerk, Bremerton, Wash., May 26.

RAILS, CARS . . .

RAILROAD CARS PLACED

Chicago & Northwestern, fifty 70-ton mill type gondolas to Pressed Steel Car Co., McKees Rocks, Pa.

New York Central, 30 multiple unit passenger cars, to the St. Louis Car Co., St. Louis.

Western Maryland, 1000 fifty-five ton hopper cars to Bethlehem Steel Co.

RAILROAD CARS PENDING

Supply and Facilities Division, Office of Chief of Transportation, Pentagon Building, Washington, D. C., two hundred 10,000-gallon tank cars, 56½ gage, 8-wheel units; bids May 25.

Western Maryland, 1000 55-ton steel hopper cars; purchase being negotiated with Bethlehem Steel Co. for delivery early next year.

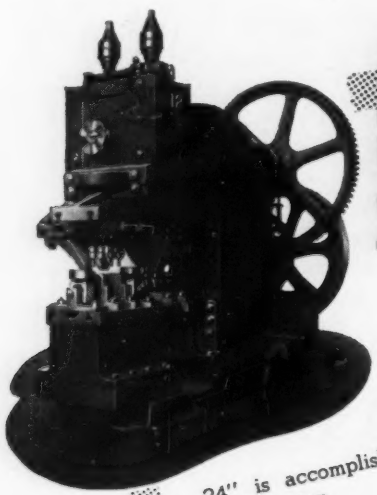
LOCOMOTIVES PLACED

Reading, fifteen, 1000-horsepower diesel-electric locomotives, to Baldwin Locomotive Works, Eddystone, Pa.

LOCOMOTIVES PENDING

Ferrocarril Provinciap de Buenos Aires, Argentina, is inquiring for 6 diesel-electric locomotives.

Pennsylvania railroad will close bids June 2 on diesel-electric locomotive equipment.



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BEAM PUNCH

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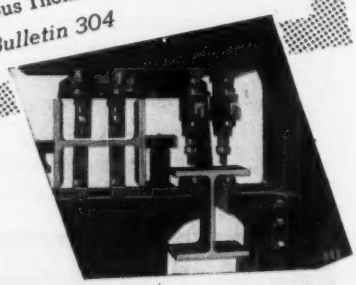


THOMAS
MACHINE MANUFACTURING COMPANY
PITTSBURGH, 23, PA.

PUNCHES • SHEARS • PRESSES
BENDERS • SPACING TABLES

19

CONSTRUCTION AND ENTERPRISE

ARKANSAS

EL DORADO, ARK.—Lion Oil Co. has awarded a $3,500,000 contract to Chemical Construction Co., New York, for design and construction of an addition to increase its capacity for production of anhydrous ammonia by 32 per cent.

FLORIDA

MIAMI, FLA.—Miami Roofing & Sheet Metal Corp., 550 N. W. Seventh St., has awarded a $94,000 contract to Gaines Construction Co., 537 S. W. 12th Ave., for erection of a warehouse.

MINNESOTA

MINNEAPOLIS, MINN.—B. F. Nelson Mfg. Co., 401 N. E. Main St., has awarded a $230,000 general contract to Johnson, Drake & Piper, 1138 Baker Bldg., for construction of a turbine room addition.

ST. PAUL, MINN.—Bechik Products Co., 786 University Ave., has awarded a $114,000 contract to Standard Construction Co., 606 Hamm Bldg., for erection of a factory and office at Eustis St. and Wabash Ave.

ST. PAUL, MINN.—International Harvester Co., 180 N. Michigan Ave., Chicago, has rejected all bids for a $1 million parts depot to be built on Franklin Ave. and Eustis St. Company will re-advertise.

MISSOURI

ST. LOUIS—Continental Can Co. Inc., Container Co. Division, 100 E. 42nd St., New York, has awarded a contract to Fruin-Colnon Contracting Co., 1706 Olive St., for construction of a plant on a 44-acre tract at 8241 St. Charles Rock Rd. Cost will be over $500,000 with equipment.

NORTH CAROLINA

LEAKSVILLE, N. C.—Hedgecock Brick Co., C. M. Hart, president, will build a $100,000 brick plant.

OHIO

CLEVELAND — General Electric Co., Nela Park, has awarded a $200,000 contract to Sam W. Emerson Co., 1836 Euclid Ave., for altering a building to create a chemical plant addition to a group of experimental laboratory buildings.

CLEVELAND—White Motor Co., 842 E. 79th St., has received a $3,300,000 order from the municipal transit system of San Francisco for 209 busses. Delivery has already started.

SHADYSIDE, O.—Ohio Public Service Co., Hanna Bldg., Cleveland, will install a $13 million turbo-generator unit at its Ohio River generating plant near here. Installation will take approximately two years.

PENNSYLVANIA

HELLERTOWN, PA. — Allentown Bethlehem Gas Co., 512 Hamilton St., Allentown, has awarded a $250,000 contract to William Werkheiser, N. Delaware River Dr., Easton, for construction of the substructure of a gas manufacturing plant.

KITTANNING, PA.—Linde Air Products Co., 30 E. 42nd St., New York, has awarded a $135,000 contract to Clairton Commercial Co., St. Clair and State Sts., Clairton, for construction of a 2-story factory addition.

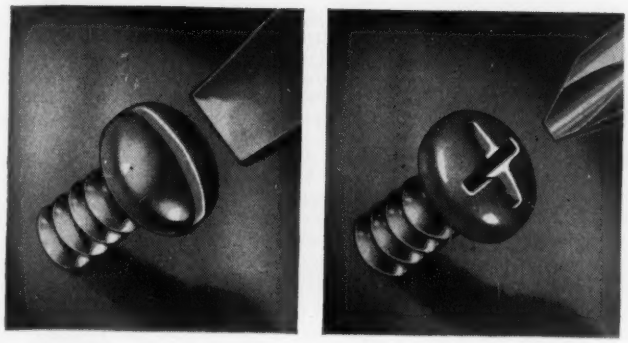
LANCASTER, PA.—Radio Corp. of America, New Holland Pike, has awarded a $400,000 contract to John McShain Inc., 17th and Spring Garden Sts., Philadelphia, for construction of a tube manufacturing plant.

PITTSBURGH—United Engineering & Foundry Co. plans to construct a new office building on Duquesne Way, between Ninth and Tenth Sts. It is expected the facility will be completed in the ensuing year.

PITTSBURGH—U. S. Engineers, 925 New

BIGGEST NEWS

IN THE FASTENING FIELD!



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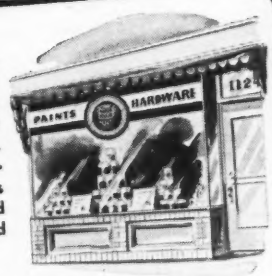

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636 Eleventh Ave. NEW YORK 19, N.Y.

Federal Bldg., has received a low bid of $1,905,622 from Sebastian B. Albergo & Sons, 1033 Peoria St., Chicago, for placing ballast and installing track for relocation of a section of the Conemaugh Division of Pennsylvania Railroad.

READING, PA.—Consumers Gas Co., 441 Penn St., plans to construct a $1 million catalytic gas plant here.

SEWARD, PA.—Pennsylvania Electric Co., Johnstown, has awarded a $500,000 contract to Berkibile Bros., 625 Swank Bldg., Johnstown, for construction of a boiler room wing.

SOUTH CAROLINA

CAMDEN, S. C.—E. I. duPont de Nemours & Co., Wilmington, Del., plans to build a $20 million plastic plant here.

GAFFNEY, S. C.—Duke Power Co. has purchased land in vicinity of Stacy Ferry Bridge on Broad River for a proposed $10 million steam plant.

SOUTH DAKOTA

GREGORY, S. D.—Rosebud Electric Association will purchase and install a 700 kw diesel generating unit at a cost of $117,000.

TENNESSEE

SMITHVILLE, TENN.—Smithville Mfg. Co. plans to build a $75,000 factory.

TEXAS

BRAZORIA, TEX.—Phillips Petroleum Co., K. S. Adams, president, Bartlesville, Okla., will build a $5 million gasoline extraction plant.

CARTHAGE, TEX.—Texas Gas Transmission Corp. will construct booster stations at a cost of $4 million.

CORPUS CHRISTI, TEX.—LaGloria Corp., Driscoll Bldg., plans a gas gathering system and line extending 25 miles to connect with Texas Eastern Gas Transmission Corp.'s main line. Cost will be $500,000.

HOUSTON, TEX.—Wyatt Metal & Boiler Works, Washington St., plans to build a $165,000 plant addition.

HOUSTON, TEX.—George C. Vaughn & Sons has received a low bid of $228,888 from Gilbert Falbo Co., 107 Morales St., San Antonio, for a warehouse, shop and office building at Broadmoor and Interurban Expressway.

NEDERLAND, TEX.—Pure Oil Co., J. S. Allen, Beaumont, manager, plans a $15 million expansion program at Smith's Bluff near here.

PASADENA, TEX.—Phillips Petroleum Co., K. S. Adams, president, Bartlesville, Okla., plans construction of an $8 million chemical plant and corollary facilities.

TEXAS CITY, TEX.—Pan-American Gas Co., M. Esperson Bldg., Houston, plans to build 20 miles of 16-in. natural gas line from Chocolate Bayou fields to here. Cost will be $500,000.

TEXAS CITY, TEX.—Linde Air Products Co., 205 E. 42nd St., New York, plans to build a $70,000 plant.

VIRGINIA

NARROWS, VA.—Celanese Corp. of America plans to construct a 3-story building here at a cost of $150,000.

NORFOLK, VA.—Norfolk & Western Railway has announced plans for eventual construction of 12 additional locomotives at a cost of approximately $3 million.

WEST VIRGINIA

FAIRMONT, W. VA.—Owens Illinois Glass Co., has awarded a $500,000 contract to Hughes-Foulkrod Co., Schaff Bldg., Philadelphia, for construction of a plant addition.

WISCONSIN

LAONA, WIS.—Connor Lumber & Land Co. plans to build a $165,000 diesel electric generating plant. Engineer is Mead & Hunt, 550 State St., Madison.

RACINE, WIS.—Hamilton-Beach Co., Rapids Dr., has awarded a contract to Nelson & Co. Inc., 1550 Yont St., for construction of a factory addition.

CANADA

BRILLIANT, B. C.—Consolidated Mining & Smelting Co. Ltd., 215 St. James St., Montreal, Que., will build a $1 million power plant addition.

VANCOUVER, B. C.—B. C. Electric Co. Ltd., 425 Carrall St., will enlarge its Horne Payne substation at a cost of $3 million.

ATIKOKAN, ONT.—Ironlake Exploration Ltd. plans a $300,000 mining development here.

OWEN SOUND, ONT.—City Gas & Electric Co. Ltd., Three Rivers, plans to rehabilitate the old city gas plant at a cost of $100,000.

ST. THOMAS, ONT.—Timken Roller Bearing Co., Ltd., Talbot St. E., plans to build a $750,000 hardening plant here. Contract will be awarded through Prack & Prack, architects, 310 Main St. E., Hamilton.

TIMMINS, ONT.—Millbren Copper Mines Ltd., c/o H. Moscoe, plans a $100,000 mining development.

WINDSOR, ONT.—Chrysler Corp. Ltd. will build a $500,000 plant office.

GATINEAU, QUE.—Commercial Alcohols Ltd., 3176 Notre Dame St. E., Montreal, will build a $300,000 magnesia insulation plant.

QUEBEC CITY, QUE.—St. Lawrence Milling & Marine Works Ltd., Samson's Bridge, will build a $100,000 machine shop.

PRICES OF LEADING FERROALLOYS PRODUCTS

(*Concluded from Page* 141)

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Eastern Zone, contract, carload, bulk, 8.7c per lb of briquet, c.l. packaged 9.5c, ton lot 10.3c, less ton 11.2c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Eastern Zone, contract, c.l. bulk 8.75c per lb of briquet, c.l. packed 9.55c, ton lot 10.35c, less ton 11.25c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.8c for c.l. and 2.5c for l.c.l. Freight allowed. Add 0.25c for notching. Spot, add 0.25c

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Eastern Zone, contract, carload, bulk 5.1c per lb of briquet, c.l. packed 5.25c, ton lot 6.7c, less ton 7.6c. **(Small size**—weighing approx. 2½ lb and containing exactly 1 lb of Si). Eastern Zone, carload, bulk 5.25c c.l. packed 6.05c, ton lots 6.85c, less ton 7.75c; Central, add 0.25c for c.l. and 0.6c for l.c.l.; Western, add 0.45c for c.l. and 0.9c for l.c.l. Freight allowed. Add 0.25c for notching, small size only. Spot, add 0.25c.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18%, and Si 53-59%). Eastern Zone, contract, carload, lump, bulk 17.50c per lb of alloy, carload packed 19.0c, ton lot 19.8c, less ton 20.8c; Central, add 0.5c for c.l. and 0.85c for l.c.l.: Western, add 2.55c for c.l. and 2.6c for l.c.l. Freight allowed. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Eastern Zone, contract, carload, lump, bulk 16.25c per lb of alloy, carload packed 16.45c, ton lot 19.35c, less ton 20.85c; Central, add 0.5c for c.l. and 0.75c for l.c.l.; Western, add 2.55c for c.l. and 2.90c for l.c.l. Freight allowed. Spot, add 0.25c.

VANADIUM ALLOYS

Ferrovanadium: Open Hearth Grade (Va 50-55%, Si 8% max., C 3% max.). Eastern Zone, contract, any quantity, $2.90 per lb of contained Va; Central, add 2c for c.l. and 3c for l.c.l.; Western, add 6c for c.l. and 9c for l.c.l. Freight allowed. Spot, add 10c. **Special Grade** (Va 50-55%, Si 4% max., C 1% max.), $3. **High Speed Grade** (Va 50-55%, Si 1.50% max., C .20% max.), $3.10.

Vanadium Oxide: All Zones, contract, less carload lots, $1.20 per lb of contained V_2O_5. Spot, add 5c.

Grainal: Vanadium Grainal No. 1, 93c; No. 6, 63c; No. 79, 45c; all fob Bridgeville, Pa., usual freight allowance.

TITANIUM ALLOYS

Ferrotitanium: (Ti 20-25%, Al 3% max., Si 4% max., C 0.10% max.). Eastern Zone, contract, ton lot, 2" x D, $1.35 per lb of contained Ti, less ton $1.40. (Ti 40-45%, Al 7% max., Si 4% max., C 0.10% max.). Ton lot $1.23, less ton $1.25; Central, add 4c for 20-25% Ti grade, and 2.1c for 40-45% grade; Western, add 13.5c for 20-25% Ti grade, and 7.2c for 40-45% grade. Freight allowed. Spot, add 5c.

Ferrotitanium, High-Carbon: (15-20%). Contract basis, per net ton, fob Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis, 6.8% C, $142.50; 3-5% C, $157.50.

TUNGSTEN ALLOYS

Ferrotungsten: (W 70-80%). Eastern Zone, contract, 10,000 lb W or more, $2.25 per lb of contained W; 200 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Eastern Zone, contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Eastern Zone, contract, c.l., lump, bulk 6c per lb of alloy, c.l. packed 6.75c, ton lot 7.5c, less ton 8.35c; Central, add 0.25c for c.l. and 1.1c for l.c.l.; Western, add 0.6c for c.l. and 3.95c for l.c.l. Freight allowed. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Eastern Zone, contract, carload, lump, packed 18.4c per lb of alloy, ton lot 19.15c, less ton 20.40c; Central, add 0.6c for c.l. and 1.05c for l.c.l.; Western add 3.05c for c.l. and 4c for l.c.l. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Eastern Zone contract, 100 lb or more. 1" x D, $1.20 per lb of alloy, freight allowed. Less than 100 lb $1.30; Central, add 0.75c; Western add 2.9c, freight allowed. Spot, add 5c.

Borosil: (3 to 4% B, 40 to 45% Si), $6.25 per lb contained B, fob Philo, O., freight not exceeding St. Louis rate allowed.

Bortam (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, fob Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

OTHER FERROALLOYS

Ferrocolumbium: Cb 50-60%, Mn 5% max., Si 8% max., C 0.5% max.). Eastern Zone, contract, ton lot, 2" x D, $2.50 per lb of contained Cb, less ton $2.55; Central, add 1.65c; Western, add 6.45c. Freight allowed. Spot, add 10c.

CMSZ Mixes: No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Eastern Zone, carload, 12 M x D, carload packed 17.25c per lb of material, ton lot 18.00c, less ton 19.25c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed.

Silcaz Alloy: (Si 35-40%, Ca 9-11%; Al 6-8%, Zr 3-5%, Ti 9-11%, Boron 0.55-0.75%). Eastern Zone, carload, packed, 1" x D, 39c per lb of alloy, ton lot 41c, less ton 43c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Eastern Zone, contract, carload, packed, ½" x 12 M, 15.0c per lb of alloy, ton lot 15.75c, less ton 17.0c; Central, add 0.3c for c.l. and 1.1c for l.c.l.; Western, add 0.3c for c.l. and 3.05c for l.c.l. Freight allowed. Spot, add 0.25c.

Simanal: (Approx. 20% each Si, Mn, Al). Packed, lump, carload 10c, ton lots 10.25c, smaller lots 10.75c per lb alloy; freight not exceeding St. Louis rate allowed.

Ferrophosphorus: (17-19% based on 18% P content with unitage of $3 for each 1% of P above or below the base) Gross tons per carload fob sellers' works, with freight equalized with Rockdale, Tenn.; contract price $58.50, spot $62.25.

Ferromolybdenum: (55-75%). Per lb, contained Mo, fob Langeloth and Washington, Pa., furnace, any quantity 95.00c.